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CIO

THE RESOURCE FOR INFORMATION EXECUTIVES

PLUS

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PLAYER'S GUIDE TO THE SCO LAWSUITS Page 42

Home Depot Invests $1 Billion in IT Infrastructure to Meet Lowe's Challenge

HOME IMPROVEMENT

Inside the transformation from build to buy, from high-touch to high-tech. Will it do the job? Page 34

BY MERIDITH LEVINSON

CIO Bob DeRodes didn't think Home Depot's old IT infrastructure could support the company's growth. So he's building a new one.

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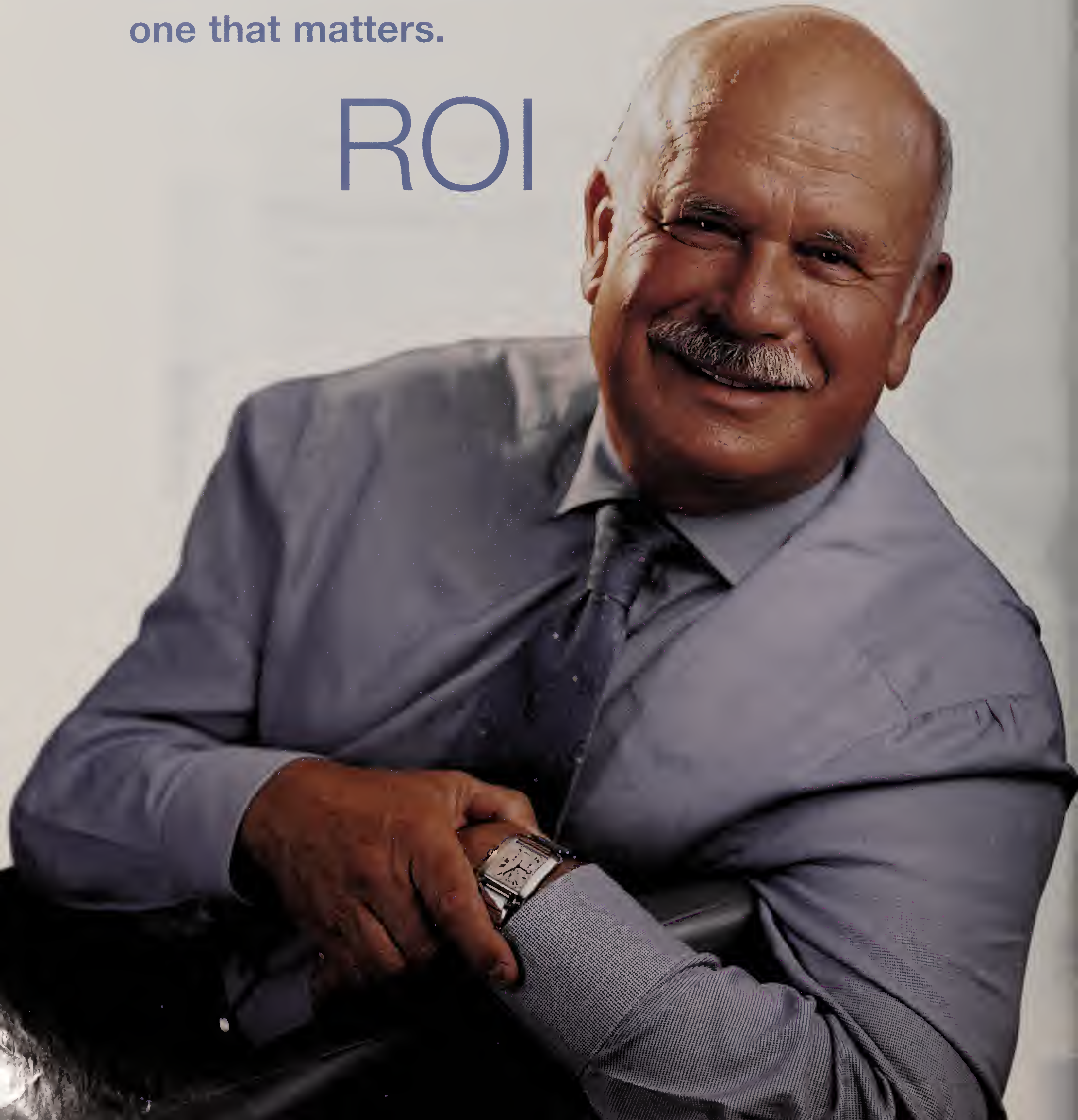

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CIO

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Home Improvement

Home Depot is investing nearly $1 billion in IT infrastructure as part of a massive modernization effort. The retailer is betting the move will help accelerate growth and earnings and beat back its prime competitor, Lowe's. But can a strategy designed to improve efficiency in a mammoth corporation also increase customer satisfaction? *By Meridith Levinson*

COVER PHOTO BY STEVEN VOTE

RETAIL METRICS THAT MATTER:
"The new registers have decreased the average time it takes a customer to check out from 6.7 minutes to 4.9 minutes."
–BOB DeRODES, CIO
HOME DEPOT
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CIO

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If you want to retain top IT talent, ask them what they like and don't like about your organization. And then act on it. *By Fred Mapp*

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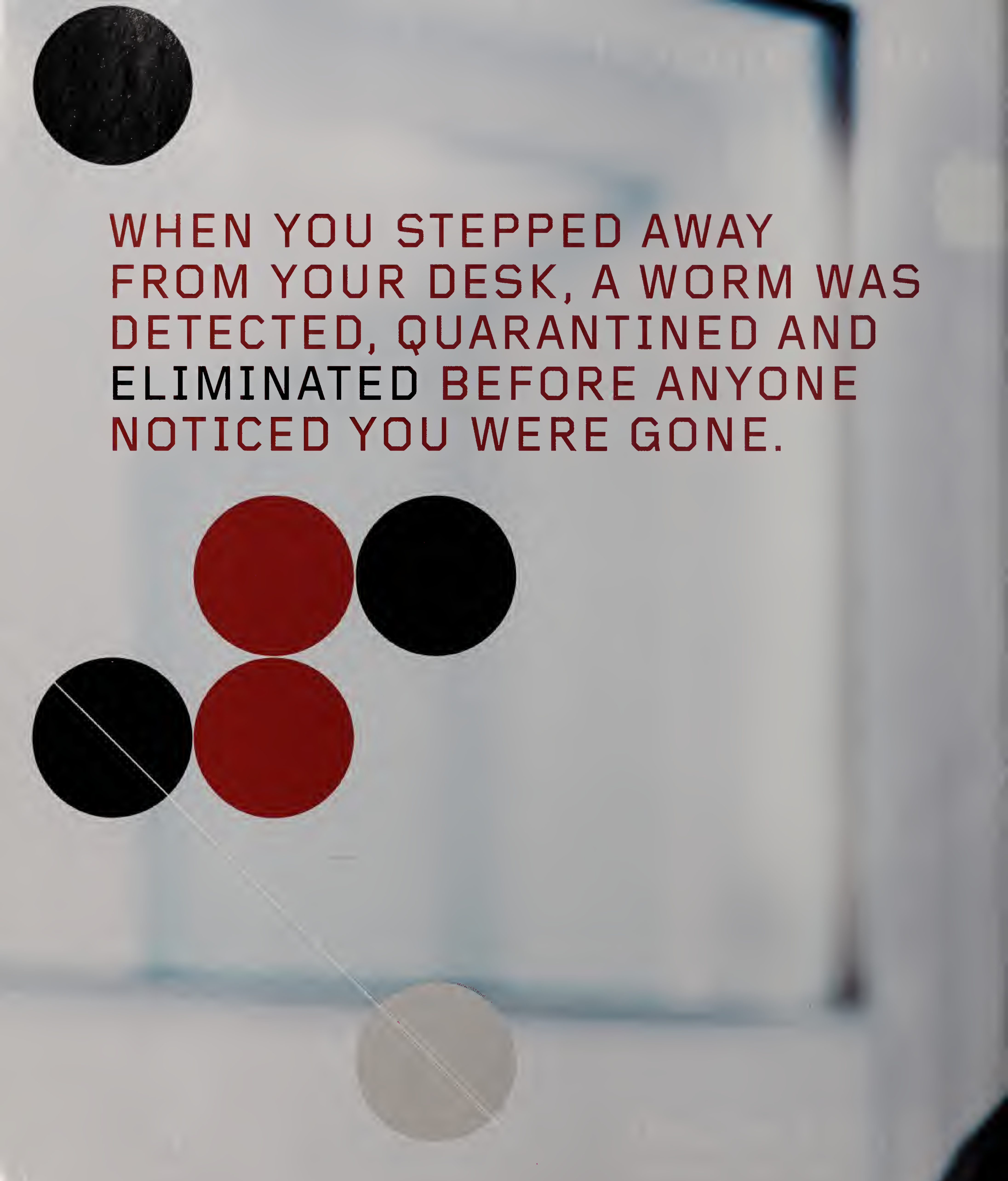
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What's the Latest Round in the SCO Boxing Match?

It began with a simple asset inventory. It's ended with SCO leaving the Linux business and entering the litigation business. All the big names are there: Microsoft, IBM, Linus Torvalds, AutoZone. AutoZone? You'd better stay tuned if you don't want your company's name to be next. Read **The SCO Slugfest** (Page 42), then check out our online resources that present the only real-time way to keep up with the SCO-Linux debate. Find the links in the online version of this article or at *www.cio.com/printlinks*.

ADD A COMMENT

You Never Listen

If that's what your staff is saying about you, you've got big problems. With the fear and uncertainty that many IT professionals are feeling as a result of the stampede toward offshore outsourcing, it's imperative that you not only ask staff what they like and don't like about your organization: You have to act on it. Fred Mapp, CEO and president of the World Congress on Information Technology, outlines his case in **Open Ear Policy** (Page 30). What's your take? Are you listening? Go to the **Add a Comment** section of this column online and lend us the wisdom of your ear.

Keep Up Online

Help for the Busy CIO

Who knows, maybe you're on vacation this month? But, probably not. If you'd like to shave a little time off your workday, subscribe to **The CIO Insider** newsletter, and get all the best of CIO and current top-of-mind thinking delivered right to your inbox. It's free. Just sign up at *www.cio.com/newsletters*.

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Career Resources

CAREER COUNSELOR: This week, our experts discuss moving from director to CIO, moving to a smaller company, dealing with impending mergers, moving from CIO to technical sales and more. Go to *www.cio.com/executive*.

MOVERS AND SHAKERS: Who's going where and who's just left what could be your dream job? Check out our industry watch at *www2.cio.com/movers*.

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Reader Feedback

HELP FOR THE NEXT GENERATION

I found David Guzman's May 1, 2004, article, "Against All Odds," to be very moving.

I have forwarded it to my daughters so that they can understand and appreciate the commitment and drive it takes to find success—however you define it—in their lives. I want them to see someone overcome hardships, since those trials and tribulations are not often found in their ordinary lives. They face few obstacles (aside from peer pressure and the results of a broken home) because of what has been provided for them based on their skin color, economic strata and home life. Yours is a story of commitment and contribution.

Thanks to Guzman for sharing his passion.

Joe Noonan • *Oracle* • *joseph.noonan@oracle.com*

Peer to Peer

Against All Odds

Technology can be a double-edged sword. Our challenge is to make sure it has a positive impact on today's youth, the future of our world.

As far as our own children being privileged, Guzman hit the nail on the head. Society needs to ensure that all children have access to technology through schools and that all parents understand its benefits. We must stay involved in our children's lives to make a difference, and not rely on the school systems to be babysitters or expect somebody else to take ownership.

R. Earnie Seibert

earnie.seibert@penske.com

THE EVOLVING BLOG

The blog by any other name...is old news.

While it only recently has been known as blogging, what Michael Schrage describes in "The Virtues of Chitchat" (May 15, 2004) has existed in companies for longer than the 20 years I have been working in IT.

From the Usenet newsgroups and bulletin board software to e-mail archives and the blog, the technology has evolved, making the process easier and better, but the concept of an open log of group communication around a project or common interest is as old as communication itself.

Open any management textbook and you will see reams of theory about the informal information networks that develop in companies and how to capture their value. From the watercooler to the blog, some companies will fight them, some embrace them, for good reasons and for bad, and either way they will carry on and continue to adopt new technologies that make the process simpler.

What Michael Schrage finds "easy to imagine," the rest of us have been finding easy to do for many years now. Welcome to the real world, Mr. Schrage; nice of you to notice us.

Gideon Sheps

NetDimensions

gideon@netdimensions.com

CIO: A SHORT-LIVED ROLE

Many thanks to Patricia Wallington for "The Ties That Bind" (May 15, 2004). Her insight is right on.

One of the most difficult (and recurring) challenges that I face as a manager is setting my coworkers' expectations of my role. Many managers and direct reports seem to have skewed perceptions of the role and involvement of managers. I have found it difficult to watch the "big picture" when upper management expects me to provide detailed troubleshooting and updates on the smallest of issues. At the same time, many direct reports expect me to be the expert in all of their job functions: master business analyst, master technologist, master designer and so on. It is unfortunate that good management skills are often discouraged by the organizations that need them the most.

It was hard for me to personally let go of doing what made me a successful individual performer. It is even harder to get others to understand that my real value is in unleashing and directing the performance of those I lead.

Diane D. Miller

dianedmiller@mindspring.com

What Do You Think?

Send your thoughts and feedback to **letters@cio.com**. Letters may be edited for length or clarity. For a link to the articles mentioned, go to **www.cio.com/printlinks**.

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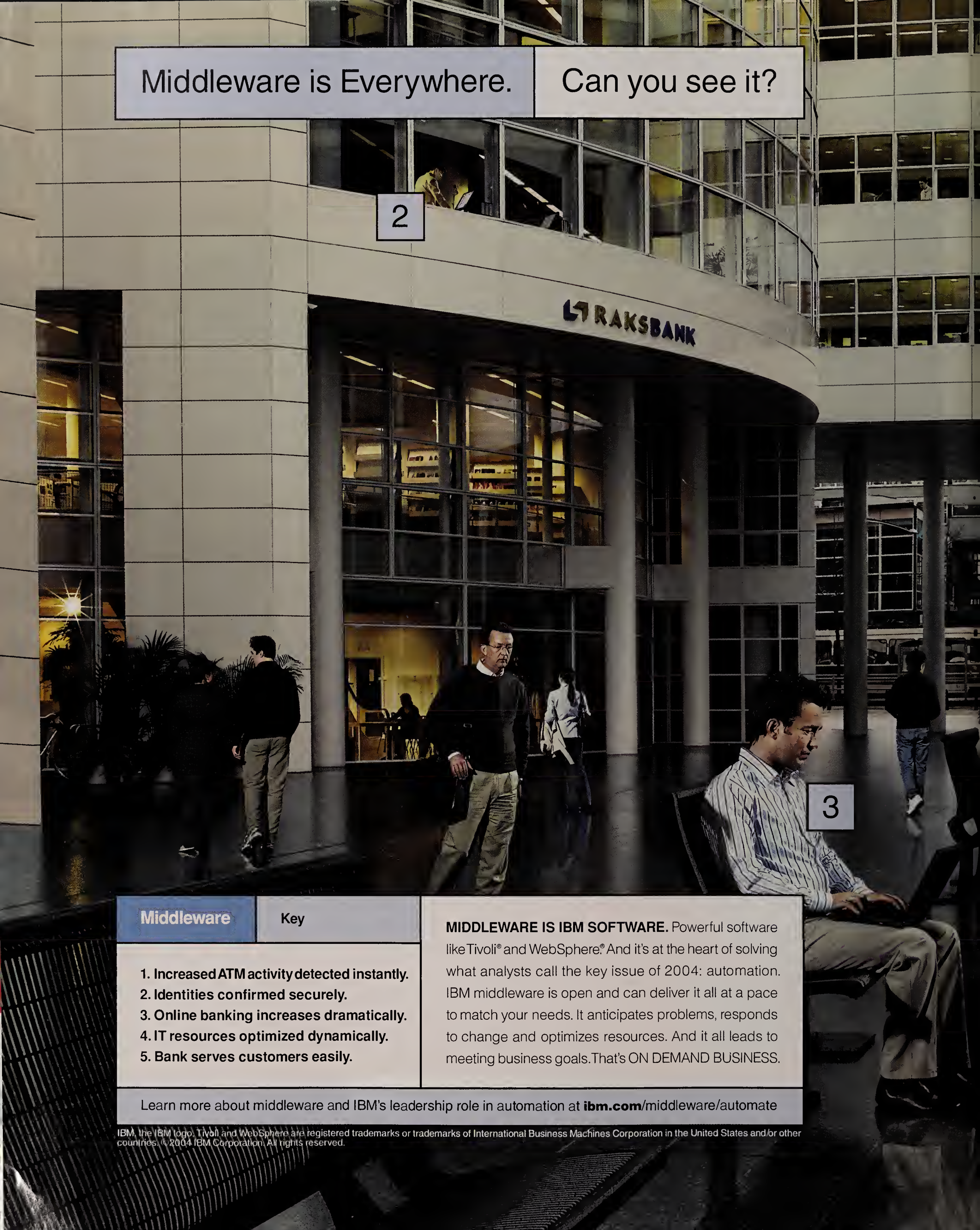

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Edited by Michael Goldberg and Megan Santosus

ELECTION 2004

E-Voting Debacle Looms

A Los Angeles voter checks his ballot during last October's recall election. Electronic voting systems are designed to replace paper ballots, but some election officials are demanding the systems provide an audit trail.

This November millions of voters will cast their ballots using touch-screen e-voting machines despite increasing evidence that the technology is far from fail-safe. Indeed, as the election nears, the debate over electronic voting has become ever more contentious.

Its fans believe that e-voting—in which votes are cast, recorded and counted electronically—will ensure the integrity of results, streamline election administration, and at last give Americans who previously were unable to vote unassisted access to a secret ballot. While those benefits may be true, a growing contingent of e-voting opponents, among them a vocal group of computer scientists, is saying that e-voting software is currently too rife with security gaps and bugs to serve as the linchpin of our democracy.

Despite the uncertainty, e-voting is destined for a polling place near you. According to Election Data Services, close to 20 million registered voters used e-voting systems in 2000, and that number will leap to more than 50 million this November.

That rollout assuredly will not be smooth. In April, for example, California Secretary of State Kevin Shelley banned the usage of a touch-screen system from Diebold Election Systems in four counties, citing the use of uncertified software. For all touch-screen machines, California now requires vendors to provide a paper audit trail and access to source code upon request. California also will require polling places to provide paper ballots to voters upon request.

Before e-voting becomes a secure, reliable and accepted way of choosing our leaders, experts say three key challenges must be addressed: how to provide reliable audit trails that will help defend against fraud and ensure an accurate recount; how to prevent tampering of the electronic transmission of data; and how to train approximately 173 million

Continued on Page 20

PHYSICAL SECURITY

GOP Convention Security Takes Over New York City

Security costs money. Security at the Republican National Convention, the four-day event scheduled later this month in Midtown Manhattan, will cost an estimated $76 million.

Most of the money ($59 million) goes to pay overtime for 6,000–10,000 New York City police officers to patrol in and around Madison Square Garden during the Aug. 30–Sept. 2 event. The estimate also includes the training of officers to prepare for a potential terrorist attack (whether it's chemical, biological or radiological), The Associated Press reported. In addition, 10,000 officers were scheduled to receive training in subway track safety, handling hazardous materials and "terrorism awareness."

Awareness about the GOP gathering will not be a problem in New York. Like the recent Democratic convention in Boston, where plans called for highway and train station shutdowns (see "Security Trumps Transportation in Boston," *www.cio.com/printlinks*), residents and tourists alike will know it's there.

For one thing, organizers of 14 street fairs that traditionally occur at the end of August have had to reschedule their events, *Newsday* reported. Why? The police can't direct traffic around the fairs because they are too busy guarding the convention.

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E-Voting Debacle Looms

Continued from Page 18

registered voters of wildly varying education levels and technical sophistication to use the new systems.

Many computer scientists believe the best way to mitigate the audit problem is to combine electronic machines with good, old-fashioned paper by including a voter-verified paper ballot. "The big issue in any election is auditability," says Doug Jones, associate professor of computer science at the University of Iowa. An auditable election, in his view, is one in which the results are verifiable both to independent observers and to any other interested party.

▸ THE TOOLS OF DEMOCRACY ◂

In addition to common challenges like fraud and ballot design, each voting option comes with its own set of risks and rewards

Method	Advantages	Risks
Paper	Intuitive; voter-verified ballots	Ballot-box stuffing; time-consuming and error-prone tallying
Punch Cards	Automated tallies; voter-verified ballots	Undervoting; overvoting leads to disqualification of ballots
Lever Machine	Increased privacy	Mechanical breakdown; no paper trail; undervoting
Optical Scan	Automated tallies; voter-verified ballots	Undervoting; overvoting leads to disqualification of ballots
E-Voting	Eliminates overvoting; supports multiple languages; enables access for disabled voters	Auditing difficulties; hacking

To address security risks, e-voting proponents point to locked, tamperproof computers; one-time, quick transmission of results; and trained poll workers. But computer scientists say the most serious security issue posed by current e-voting systems is source code riddled with vulnerabilities.

Although election boards certify e-voting systems prior to their use, critics insist that voting software should be open source, or at least open to public scrutiny. With software, critics point out, it takes only one well-placed person to exploit insecure code and perhaps change the outcome of an election.

Given the wide range of computer literacy among the voting public, Jones says that election officials and vendors need to pay more attention to ballot and interface design so that voters don't do things they don't intend—such as submitting their ballot before selecting all their candidates.

To date, research on e-voting usability is lacking. To analyze usability, the National Institute of Standards and Technology recommends that election officials run pilots with actual voters and poll workers. The institute also suggests that vendors adhere to common usability standards—although such standards have yet to be defined.

As is frequently the case in political matters, both sides—the vendors promoting their wares and the computer scientists worrying about election integrity—are digging in. This presidential election will put millions of touch-screen systems to their biggest test yet. And if this election turns out as close as the last one, e-voting may be the number-one postelection story. To learn more, read "E-Democracy: The Lowdown on E-Voting" at *www.cio.com/printlinks*. –*Megan Santosus*

OFFSHORE OUTSOURCING

Job Stats Undercut Offshore Fears

In this election year, offshore outsourcing is the hot-button economic issue. But just how many jobs are actually sent overseas? According to a report from the Bureau of Labor Statistics (BLS), the number of American jobs lost to "overseas relocations" totaled 4,633 during the first quarter of 2004. This accounts for only 2 percent of the nearly 240,000 jobs lost during that time. In fact, domestic outsourcing (jobs going from one American company to another) claimed more than twice as many positions (9,900) as offshore outsourcing did.

> "There's no problem with the numbers, just the interpretation."

When the report was initially released in June, sentiment among the media seemed to imply that the impact of outsourcing on U.S. job losses has been greatly exaggerated. But some economists say the report doesn't tell the whole story of outsourcing.

"There's no problem with the numbers, just the interpretation," says Charles McMillion, president and chief economist at MBG Information Services, a business information, analysis and forecasting company. McMillion points out that the report includes statistics gleaned only from companies that laid off 50 or more employees—a snapshot, he says, that "represents maybe 3 percent of the job turnover at any given time." The real impact of outsourcing isn't captured in the BLS report, McMillion says. "With product cycles as short as they are, and a dynamic labor market, the economy needs to generate large numbers of jobs," he says. A better gauge of offshore outsourcing's impact on the U.S. economy is not how many jobs are lost to it, but how many jobs are never created in the first place. –*M.S.*

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Off the Shelf

Edited by Carol Zarrow

Social Studies

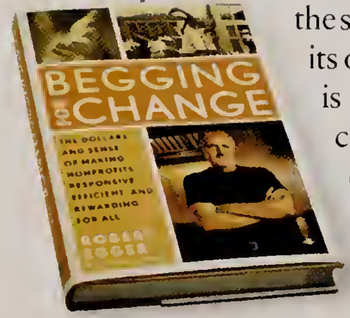
As the ghost of Jacob Marley famously advised Scrooge,
"Business! Mankind was my business. The common welfare was my business...."
Here are four recent books that honor his insight.

Begging for Change

The Dollars and Sense of Making Nonprofits Responsive, Efficient, and Rewarding for All

By Robert Egger

HarperCollins Publishers, 2004, $24.95



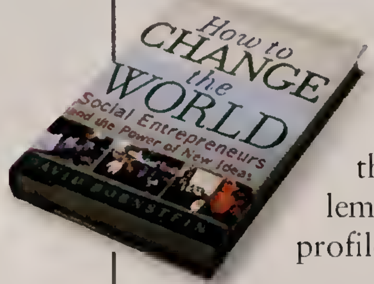
Many in the for-profit world view nonprofit and especially charitable organizations as poor relations. This book may change that attitude; although author Robert Egger, who has run a community kitchen in Washington for the past 15 years, isn't exactly happy with the status quo of how many nonprofits operate. As the title suggests, this is basically a book about effecting change. Why do groups keep doing the things they do even when they don't work? Are organizations capable of figuring out how to do things better, smarter, faster and cheaper? Egger poses these questions to nonprofits, but perceptive readers will acknowledge that corporations need to answer them too. *–Carol Zarrow*

How to Change the World

Social Entrepreneurs and the Power of New Ideas

By David Bornstein

Oxford University Press, 2004, $28



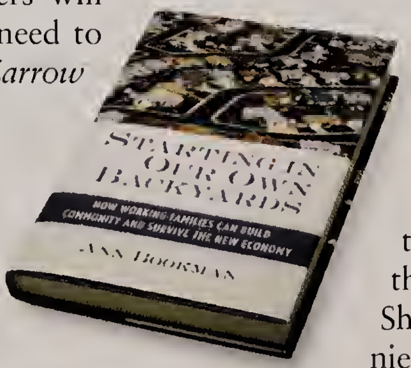
When it comes to doing what matters and what's right, this book takes the perspective of individuals rather than corporations. Focused on those who solve social problems on a large scale, this book profiles a select group of highly energetic, innovative and yet largely unknown people. While the author says social entrepreneurs are ordinary people with an extraordinary drive to change the world for the good, the stories he tells belie his own conclusion: These are not ordinary individuals. Can one person indeed effect positive social change? This book says yes. *–Megan Santosus*

Starting in Our Own Backyards

How Working Families Can Build Community and Survive the New Economy

By Ann Bookman

Routledge, 2004, $26


STARTING IN OUR OWN BACKYARDS
HOW WORKING FAMILIES CAN BUILD COMMUNITY AND SURVIVE THE NEW ECONOMY
ANN BOOKMAN

Social anthropologist Ann Bookman spent nearly five years conducting field studies of how 40 Boston-area families struggled to balance family responsibilities with the demands of work. She found that families who both participate in and rely on informal networks of relatives, other parents, social agencies and religious institutions come closer to achieving that balance than families who don't. She therefore urges companies to invest in the family support services on which their employees rely and encourage employee involvement in community volunteer work. As you read this book, think about how the people in it could easily be your employees, your coworkers or even yourself. *–C.Z.*

CIO Best-Seller List

Execution: The Discipline of Getting Things Done
By Larry Bossidy and Ram Charan
Crown Publishing Group, 2002

Fish! A Remarkable Way to Boost Morale and Improve Results
By Stephen C. Lundin, Harry Paul and John Christensen
Hyperion Press, 2000

Trump: The Way to the Top: The Best Business Advice I Ever Received
By Donald J. Trump
Crown Publishing Group, 2004

Now, Discover Your Strengths
By Marcus Buckingham and Donald O. Clifton
The Free Press, 2001

Good to Great: Why Some Companies Make the Leap—and Others Don't
By Jim Collins
HarperCollins, 2001

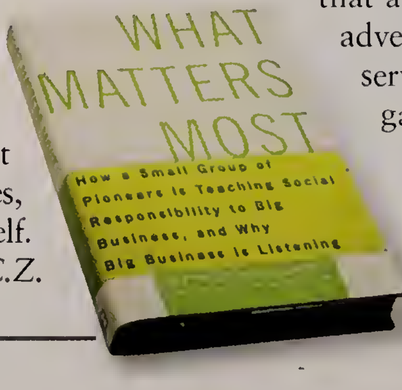
SOURCE: Compiled by Borders Group, June 2004

What Matters Most

How a Small Group of Pioneers Is Teaching Social Responsibility to Big Business, and Why Big Business Is Listening

By Jeffrey Hollender and Stephen Fenichell

Basic Books, 2004, $26


WHAT MATTERS MOST
How a Small Group of Pioneers Is Teaching Social Responsibility to Big Business, and Why Big Business Is Listening

If nothing else, this book will change your thinking about what makes a company socially responsible. One might expect coauthor Jeffrey Hollender—CEO of "green" company Seventh Generation—to be a diehard on the topic. Yet in his opinion, being socially responsible primarily requires that a company acknowledge any adverse effects of its products and services, and work toward mitigating them. The index of resources about doing business in a socially responsible way is particularly comprehensive and useful. *–M.S.*

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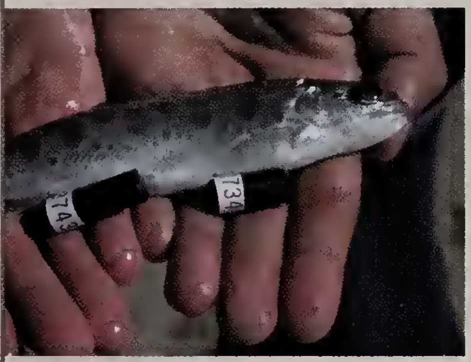
MARINE BIOLOGY

Chips for Fish

Scientist uses computer tags to track Pacific coast salmon

Where salmon swim once they've hatched—their exact path up the Pacific Northwest coastline to Alaska—is a question that's long puzzled scientists working to better manage North American fishing stocks. Now David Welch, a British Columbia-based marine biologist, is using tiny computers and data retrieval technology to reveal the fish's secret migratory lives.

As part of the Pacific Ocean Salmon Tracking (POST) project, Welch has surgically implanted tiny computer chips into the body cavities of roughly 1,200 salmon. These computer chips, called acoustic tags, transmit individual serial numbers that are detected by receivers that sit on the seabed. When a tagged fish passes within range of a receiver, the device records information on the direction, speed and timing of the salmon's movements. Once boats retrieve these receivers from the water's depths via a tracking system and retrieval mechanism, scientists can reconstruct and examine the data.



Acoustic tags of differing life spans are shown beside a steelhead smolt that has been implanted with a tag.

A lot is riding on Welch's detective work. Until recently, marine biologists had to physically retrieve tags attached to fish to determine how far the fish had traveled. Even after that effort, there was no way of determining what had happened to the fish throughout its journey from river to ocean.

But thanks to innovations in the size and battery life of tags, as well as the development of underwater listening stations, Welch will be able to collect data on where salmon go once they've reached the ocean, how long they stay in different areas and how ocean conditions such as temperature affect survival rates—key information that will lead to better conservation and effective fish management strategies.

"For the first time ever, we will have an extremely rich data set on many different stocks of salmon that will allow us to pry open the ocean's black box and understand where salmon go," says Welch.

But a unique blend of fish and chips isn't all that renders Welch's investigation innovative. By midsummer, Welch will have placed receivers along 120 kilometers of seabed, stretching from the Columbia River in Washington up toward the northern Gulf of Alaska. The POST project, with $6.2 million in funding in the next two years from foundations and industry, is a geographically ambitious undertaking that has never before been attempted.

"The scope at which David is attempting to produce data will provide some really interesting information on a much broader [geographical] scale," says James Lindholm, a senior research biologist at the Pfleger Institute of Environmental Research in Oceanside, Calif.

The breadth of data Welch collects will ultimately hinge on how successfully he retrieves his receivers from the bottom of the ocean in the early fall. But if Welch's recent pilot projects are any indication, the secret lives of salmon will soon surface. *–Cindy Waxer*

Marine biologists plan to track the migratory paths of Pacific coast salmon on their way to these Gulf of Alaska waters.

PHOTO LEFT BY DAVID WELSH. RIGHT BY ALISON MIKSCH/GETTY IMAGES; BOTTOM BY JERI GLEITER/GETTY IMAGES

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On the Move

By Meridith Levinson

Unisa CIO Takes Stock of His Career While on Vacation

For two years, Joe Gagliardi has been pondering where to go next in his professional life. While he loves his job, the 48-year-old CIO of Unisa America, a manufacturer of women's shoes and accessories, doesn't see much of a future for himself in the CIO position. For one thing, he considers it to be a young man's job because of its breakneck pace. And while he contemplates becoming CIO of a larger company, Gagliardi doesn't think he'd enjoy dealing with the politics inside big enterprises. But it wasn't until this past May when he vacationed in Jamaica with his wife and a group of acquaintances that his next step (and a plan of action for getting there) came into focus.

Gagliardi's vacation-inspired career assessment is hardly unusual. Vacations are the perfect opportunity for mulling career decisions, says Carl Gilchrist, North American leader for Spencer Stuart's CIO practice. Gilchrist can't begin to count the number of times CIOs have called him upon returning from vacation to tell him that they want to make a career change. Vacations are so opportune for taking stock of one's career, Gilchrist says, because when you're away from work, you are more detached from your job's stresses and can gain a perspective on whether you still enjoy your career.

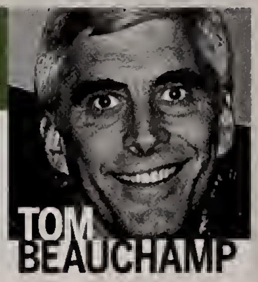
For Gagliardi, getting away from the workaday world (where everyone around him is stressed) to stay at a resort surrounded by a bunch of entrepreneurs helped him see what professional direction he should take. As he glanced around the resort's pool at his wealthy traveling companions, he noticed they didn't once mention the pressures of their jobs. It dawned on him what these men have in common: They're all established, self-employed businessmen. Gagliardi saw that the main difference between him and these men was that they had all taken a risk, worked hard to get their own businesses off the ground and were now reaping the rewards. He, on the other hand, had chosen to spend his entire career working for someone else and, subsequently, has always worried about his fate. Gagliardi realized then that his ticket out of the professional holding pattern he'd been stuck in for the past two years was to take a risk of his own and start his own business.

What attracts him most about starting his own business is the peace of mind that comes from knowing that his future is in his hands, not someone else's. "Not only do you make your own schedule, but you succeed or fail based on your own hard work and not someone else's mistake," he says. "For instance, I'm worried at my company that we don't sell enough shoes to stay profitable." Beyond implementing cost-effective systems, he adds, "there's nothing [much] I can do about it."

> **Why start your own business? "Not only do you make your own schedule, but you succeed or fail based on your own hard work."** —JOE GAGLIARDI

So what's Gagliardi planning to do next? As excited as he is to start his own business, he doesn't want to take on too much change too soon, so he doesn't plan on quitting his day job as CIO. He intends to start a Web-based business on the side importing and selling an herbal supplement he's been taking under his doctor's supervision to control his cholesterol. Gagliardi wants to start out small so that he can place and fill orders during evenings and weekends in order to minimize his investment and any potential losses if he doesn't succeed. "Hopefully we'll get more orders than we can handle, but if it doesn't happen, we're not out much," he says. "And if this doesn't work, it will be another thing."

NEWS OF OTHER MOVES



The following announcements testify to the importance of the CIO position and indicate that things might actually be looking up for CIOs:

- **PetSmart** has appointed **Jeff Yabuki**, CIO of H&R Block, and **Rita Foley**, the former CIO of Westvaco (now SVP of MeadWestvaco), to its board of directors.
- Minneapolis-based manufacturer **Tennant Co.** has elected **Jeff Balagna**, CIO of Medtronic to its board of directors.
- **Tom Beauchamp**, the new CIO of teen clothing retailer **Hot Topic**, now reports to the CEO.
- Robert E. Keller, president and CEO of **APAC Customer Services Inc.**, has named his CIO **Mark E. McDermott** as a member of his senior management team.

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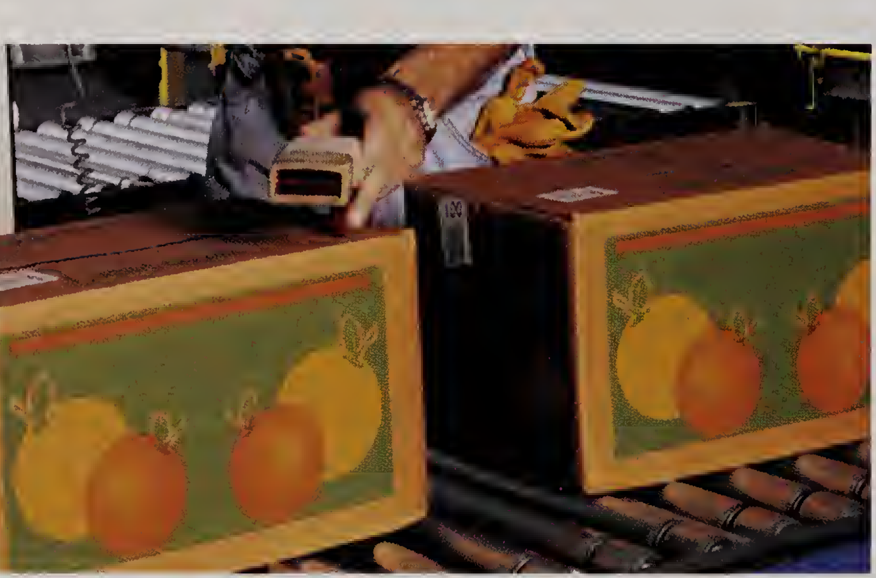
SUPPLY CHAIN STANDARDS

Fruit Vendor Updates Systems to Satisfy Wal-Mart

In early 2003, the supply chain writing was on the wall. Executives at J.R. Wood, a privately held, $135 million frozen fruit vendor, knew they would need to update their IT systems to more efficiently enable electronic transmissions about product shipments to Wal-Mart.

J.R. Wood's efforts would start with an upgrade to an integrated package to interface with an ERP system, then support UCCnet, an initiative started in 1998 by the nonprofit Uniform Code Council standards group to create a common repository for product data—prices, colors, dimensions and other specifications of goods headed for retail shelves.



Initiatives aimed at standardizing supply chain technologies are popular with retailers, but can be frustrating to their suppliers since cleaning up a data repository to automate it can be costly. But with powerful players like Wal-Mart using their clout to mandate adoption, compliance with measures such as UCCnet and radio frequency identification (RFID) is a matter of when, not if.

Implementation of the new systems at J.R. Wood's Atwater, Calif., headquarters wasn't without snags; the software the company used didn't integrate with its ERP system, J.D. Edwards' World software.

With a January 2004 Wal-Mart deadline looming, IT Director Jennifer Jones went shopping for a replacement and settled on a system from Extol International. J.R. Wood went live on UCCnet with Wal-Mart in February. The company now supports EDI transactions for all of its products.

Jones says the system helped her company improve its internal processes. "We're able to better communicate information about our products across business units. And from sales to logistics to IS, we have better visibility," she says.

UCCnet's enthusiasts tout its potential for reducing costly product data errors, but J.R. Wood has so far seen only a small increase in error detection. It's also finding slow adoption among its smaller customers: Of the 200 retailers stocking J.R. Wood's products, only three are so far taking advantage of the company's UCCnet support. Still, for the modest investment involved (J.R. Wood spent less than $50,000 on the infrastructure for its UCCnet link), Jones says she's satisfied with the returns.

J.R. Wood's investment is on the low side, says AMR Research analyst Kara Romanow. For companies without a clean, central data repository, properly enabling EDI and UCCnet support can cost millions. And only wide-scale adoption will lead to big savings. "The problem is, that hasn't really been happening. A lot of companies have been taking shortcuts" that don't ensure clean, reliable data, Romanow says.

The next milestone is support for RFID tagging, a technology for tracking product units that could replace bar codes. Wal-Mart already put its top 100 suppliers on notice that it expects them to begin RFID tagging shipments next year, and others in the retail Goliath's pipeline, like J.R. Wood, are making plans for it by building on earlier UCCnet efforts. "Our EDI and UCCnet package sets us up well to expand into RFID," Jones says.

–Stacy Cowley

This Date in IT History

August

Microsoft Launches Windows 95

Aug. 24, 1995

What can a marketing campaign of over $150 million buy? Global television spots and media coverage announcing your new product. Banners touting its name from landmarks like Toronto's CN Tower. An official song by the Rolling Stones (*Start Me Up*). An onstage introduction of your CEO by *Tonight Show* host Jay Leno at your company's release celebration. Lines at retail stores, with shoppers awaiting its midnight release.

All that and more (32-bit computing! No more DOS!) is part of Microsoft's eight-language launch of Windows 95, its multitasking PC operating system.

"It's almost uncontrollable," says early Windows 95 tester Barry Lynn, a then-executive vice president of IT at Wells Fargo, in an article published by *The New York Times*. "By a year from now it will be our pervasive desktop operating system internally."

–Michael Goldberg

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and forward

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Peer to Peer

Field-Tested Ideas from CIOs for CIOs

Open Ear Policy

ILLUSTRATION BY CHRIS BUZELLI

If you want to retain top IT talent, ask them what they like and don't like about your organization. And then act on it.

BY FRED MAPP

WHILE THE OFFSHORE outsourcing of IT work may dominate the news in this presidential election year, savvy CIOs know that the success of their companies continues to depend on top-flight, in-house IT talent. In fact, there is a general consensus among CIOs that finding and keeping motivated and talented IT professionals these days requires as much attention as it did during the height of the technology boom in the late '90s. (For more on this, read "The Vanishing IT Department," at *www.cio.com/printlinks.*) Companies had trouble retaining workers during the boom days because IT workers could pick from so many other tempting offers; today they face a different challenge.

Now, IT management has to deal with the fear and uncertainty that many IT professionals are feeling as a result of the stampede toward offshore outsourcing. Even employees who have not lost their jobs thus far are worried about the future. And many of them are leery of continuing to work for a company that outsources. In addition, declining enrollments in computer science programs indicate that it may be harder to recruit entry-level IT workers in the coming years.

Throughout my career, I have found retention and recruitment issues to be a major source of angst for IT organizations. When I was CIO of AMD, a major semiconductor manufacturer, I decided to look at the reasons why members of our IT staff left the company and determine how we could better identify, develop and retain people within IT. The idea for the study emerged from a global conference for the company's IT managers that I had organized to set the overall direction for my organization. Attendees were divided into teams, and each team was assigned a different initiative to pursue. One of the teams was asked to focus on the recruitment, development and retention of world-class IT employees. This team (which consisted of representatives from HR and various IT staff members) was

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tasked with investigating attrition in IT and developing retention strategies. They suggested a survey of employees would be a worthwhile first step.

Shortly after the conference, this team distributed the first questionnaire in a series to employees who had worked within our IT department, resigned from the company and later returned to AMD to work within IT again (in either the same position or a different one). We wanted to understand the circumstances that led to the employees' resignations and also why they decided to return. In addition, exit data from employees who had left the company was collected and analyzed. The team also examined attrition and retention research from various sources—such as Gartner and IDC—to understand industry trends and to compare our company's IT turnover rate with similar organizations'.

Any manager who has endured an extended recruitment process to fill a key position knows that it is preferable to keep a talented employee than to find a new one.

The survey results showed that employees liked the benefits of the company's philosophies and culture (which stress that people come first and profits will follow). This aspect was one of the main drivers in bringing former employees back. However, we learned that many had resigned in the first place because management was not demonstrating adequate leadership—especially when communicating a vision, setting team direction and helping employees understand how they fit into the company's overall goals.

The survey also found that management needed to ensure that employees were enjoying their day-to-day work and were appropriately challenged. (After all, employees who feel underutilized and are not continuously challenged with new projects are likely to look elsewhere for employment.) This meant introducing new and exciting technologies that would give employees opportunities to learn new skills. We also realized that a key factor in retention is reinvigorating relationships between employees and their managers; there must be regular conversations about career development and training to keep employees engaged and challenged.

Rewards and recognition was another area that needed to be addressed, according to the survey results. Providing employees with competitive salaries is essential, though many employees are motivated by things other than money. Managers must determine what form of recognition works best for an employee and use it frequently to reward good performance.

How to Avoid Employee Burnout

Given the success of our first survey, we decided to send another one to IT employees who had transferred into positions outside of IT but were still employed within the company. Again, management issues came through loud and clear. Specifically, respondents said recognition and appreciation from management was sorely lacking. There were also comments intimating that employee burnout was directly related to less-than-sensitive managers who didn't keep track of their employees' workloads. When asked what IT could do to retain its employees, respondents overwhelmingly said better management, improved leadership and more respect for employees' contributions to the company.

The findings from these surveys gave us invaluable directions for how to address retention issues. In the ensuing months, we established leadership development classes for IT management (especially for those who were newly promoted); we enhanced our career development programs to guarantee that employees are advised of their performance and what is expected of them; and, of course, I instructed management to hold communication meetings with employees to provide feedback on these findings and what we were going to do about them.

We also established a compensation strategy to ensure that our pay is competitive and aligned with the market. And we implemented a process for identifying and rewarding major contributors to the company, as well as what I call "on the spot" awards for employees who respond quickly to customer needs. We also developed capabilities for monitoring the success of the retention strategy and communicating that strategy to IT management in quarterly feedback sessions.

Such tools can be readily adopted by many companies to keep employees happy. As companies continue to harness new technologies to support their business strategies, the need to maintain a focus on the retention of skilled IT professionals will only increase. Any manager who has endured an extended recruitment process to fill a key position knows that it is preferable to keep a talented employee than to find a new one. CIOs must accept the responsibility for building the strategies and programs that will not only retain top talent, but also will provide the type of environment where IT professionals can flourish and make significant contributions to the company's overall success. CIO

Fred Mapp, who has held key IT executive positions at IBM, American Express and AMD, is now the CEO and president of the World Congress on Information Technology. He is also the author of *Mapping Information Technology to Your Business*, published in July. His website is *www.mapping-it.com*. Please send your comments to *letters@cio.com*.

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HOME

"If we hired every electrician in the United States, we wouldn't have enough people to staff our electrical departments," says Home Depot CIO Bob DeRodes. "That's how big we are."

Home Depot is investing nearly $1 billion in IT infrastructure as part of a massive modernization effort. The retailer is betting the move will help accelerate growth and earnings and beat back its prime competitor, Lowe's. But can a strategy designed to improve efficiency in a mammoth corporation also increase customer satisfaction?

IMPROVEMENT

BY MERIDITH LEVINSON

Reader ROI

- Why growth and homegrown apps proved incompatible
- A project portfolio for improving customer service
- The competitive pros and cons of infrastructure investments

PHOTO BY STEVEN VOTE

Bernie Marcus and Arthur Blank tapped into America's love for size, choice and bargains when they envisioned a chain of retail warehouses stacked floor to ceiling with everything and anything a builder or homeowner could want or need. In 1978, The Home Depot was born. At last, men could experience the same sense of wonder that overcomes kids let loose in Toys "R" Us.

With its then-unusual, big-box format and its knowledgeable, helpful clerks clad in construction-sign-orange aprons, Home Depot rapidly became an icon of American culture alongside Harley-Davidson, Coca-Cola and Ford.

THE I.T. THAT GOT HOME DEPOT

to its first $50 billion won't get it to its next, say CEO Robert Nardelli and CIO Bob DeRodes.

It also became an icon of American business. By 1986, with 60 stores and 6,600 employees, Home Depot reached a billion dollars in sales. From then until 2000, revenue nearly doubled every two to three years. The company's success coincided with the increasing suburbanization of middle-class America, the nesting of the baby boomers, the real estate boom of the 1980s and the popularity of the TV sitcom *Home Improvement*. Home Depot was the right idea arriving at the right time. In 1989, it surpassed the then-37-year-old Lowe's as America's number-one home improvement retailer. Today, the company is America's second largest retailer (trailing only Wal-Mart) and the biggest home improvement chain in the world, with $64.8 billion in revenue and 11 percent of the vaguely defined U.S. home improvement market. The company opens a new store somewhere almost every other day.

What helped fuel Home Depot's dizzying growth (besides a historic economic boom) was a decentralized business model that made store regional and division managers responsible for the mix and quantity of the products on their shelves. Marcus and Blank believed that the people closest to the customer ought to be making those critical choices, not the muckety-mucks at headquarters.

IT also played a significant role. Home Depot relied heavily on homegrown systems. By building its own applications, it didn't get bogged down in customizing off-the-shelf software and didn't invest time and money in endless enterprise-wide implementations. In addition, a standard database design and an application architecture that reused software components allowed the IT staff to develop applications, such as the company's mobile ordering system (a cart equipped with a computer and printer that clerks could wheel around the store to reorder products and change prices), lickety-split.

Taking over in 2000, CEO **Robert Nardelli** believed that Home Depot had outgrown its homegrown systems and needed new IT. He gave his CIO carte blanche.

But the glory days didn't last. As the millennial malaise set in across the country, Home Depot faltered. The entrepreneurial strategies of the '80s and '90s suddenly began to look old-fashioned. With more than 1,000 stores in the United States, Canada, Puerto Rico and South America, local-level decision making had led to a hodgepodge of store layouts, confusing customers who shopped at different Home Depots and wanted to find the same product in the same place in each store. The systems on which Home Depot prided itself became too costly for the chain to support because they required so much elbow grease to change. Even the warehouse format that was so closely tied to Home Depot's identity was showing wear and tear. As Lowe's, Target, Wal-Mart and warehouse clubs added stores, Home Depot became just another big box on the increasingly homogenized American retail landscape. The thrill was gone.

When Robert Nardelli took over as CEO in December 2000, he made some dramatic changes—including the centralization of merchandising, store planning and marketing—that shook up the company. Home Depot also faced increased competition from its closest rival, Lowe's, which was aggressively expanding. At a time when Home Depot should have been prospering (with mortgage rates reaching historic lows), at a time when consumers—scarred by the 9/11 attacks—were spending more time at home, the company went into a tailspin. For 10 straight quarters, from the second quarter of fiscal 2001 through the third quarter of fiscal 2003, same store sales and net earnings growth paled in comparison with Lowe's (see "Why Home Depot Is Worried," Page 38). Home Depot's stock dropped from $67 in December 1999 to $20 in January 2003. And Lowe's customer satisfaction ratings from the American Customer Satisfaction Index were higher than Home Depot's for both 2002 and 2003.

Something had to be done.

The question was, what?

Home Depot's answer was infrastructure, infrastructure and more infrastructure.

A Billion-Dollar Bet on IT Infrastructure

Now more than 25 years old, Home Depot is going through a late adolescence. CEO Nardelli and CIO Bob DeRodes, who joined the company in February 2002, assert that the company has outgrown its homegrown system; the IT that got it to its first $50 billion won't get it to its next. New technology is needed to support the company's expansion and improve store operations and customer service (not to mention compete with Lowe's, the bogeyman across the street). To that end, Home Depot in 2002 announced an almost $1 billion overhaul of its IT infrastructure. The move is part of a massive, $7.7 billion modernization effort that includes remodeling existing stores and opening new ones. The transformation involves replacement of its more than 10-year-old point of sale (POS) system, including the installation of self-checkout counters (completed in 2003); a LAN upgrade; an IBM data warehouse for sales and labor management, which was launched in late 2002; price optimization software from ProfitLogic; SAP financials (went live in the end of May 2004); PeopleSoft ERP (went live in February 2004); two-way cordless scan guns (rolled out in April 2004); and other new applications designed to streamline price check and receipt lookup services.

While Wall Street largely has applauded Home Depot's IT initiatives (along with its recent sales and earnings growth), not everyone is convinced that it's out of the woods. In her February assessment of the company, Barbara Allen, an equity analyst with broker-dealer Natexis Bleichroeder, wrote, "We remain concerned about execution risk and competitive pressures during Depot's dramatic internal changes." She warned investors not to get too excited about Home Depot's recent comparable store sales growth, which was an important factor influencing analysts from Buckingham Research and Smith Barney to give Home Depot strong buy ratings. Allen noted that the fourth quarter fiscal 2003 growth figures were flashy only when compared to the previous year's dismal results.

And George Whalin, president of Retail Management Consultants, doesn't accept Home Depot's assertion that all this technology will improve customer service. In his view, the company is using technology to eliminate workers and cut labor costs, thereby improving profit margins. "Home Depot built their reputation, they built their business, on a customer being able to talk to a plumber or an electrician or someone who could answer questions for them," says Whalin. "That's not the case today. They're running these stores with fewer people than they've ever run them with." (In fact, based on a review of the company's annual reports, Home Depot went from 200 associates per store in 2000 to 175 associates per store in 2003.) Indeed, CIO DeRodes says that with the new self-checkout lanes, "One person can effectively clear four lanes much more efficiently, and that reflects in the cost of business."

Ultimately, says Whalin, "their ability to distinguish their stores [from their competitors] is going to be badly damaged the more they go to this model of more technology and little in the way of service."

It's a retailing truism: Strategies that improve the bottom line and inspire investor confidence don't always make customers happy.

Battle of The Titans

Home Depot	VS	Lowe's
1,635	Number of stores	952
50	Number of states	45
22 million	Customers per week	10 million
40,000+	Products carried	40,000+
299,000	Employees	147,000
$64.8 billion	2003 revenue	$30.8 billion
$342 million	2003 IT spending	$275 million
$300 million	2004 IT spending	$300 million
$80.7 billion	Market capitalization*	$41.7 billion
T1 lines with an ATM backbone	Network	Frame relay network with back-up provided by a satellite-based WAN

SOURCES: Home Depot and Lowe's *As of June 22

Fixing the Crunch at the Registers

Self-checkout stations were installed in 2003 in over 800 stores to improve customer service by (theoretically) shortening lines and wait times, and getting employees who would otherwise be working registers onto the sales floor. That line-shortening strategy doesn't appear to be working here at store #2669 in Natick, Mass., which is mobbed on a warm Saturday in spring, the home improvement retailers' Christmas season. In the outdoor garden center, lines nine customers deep form at the two open checkout lanes; people pushing flatbed shopping carts stacked with bags of mulch and potting soil can barely squeeze past each other in the narrow aisles; a male customer helps a woman load some of those heavy bags of soil onto her cart because Home Depot employees are too busy.

Inside the store, only four out of 10 cash registers are open; one of the four self-checkouts is out of service. The lines are long. The store, in its busiest season, seems understaffed.

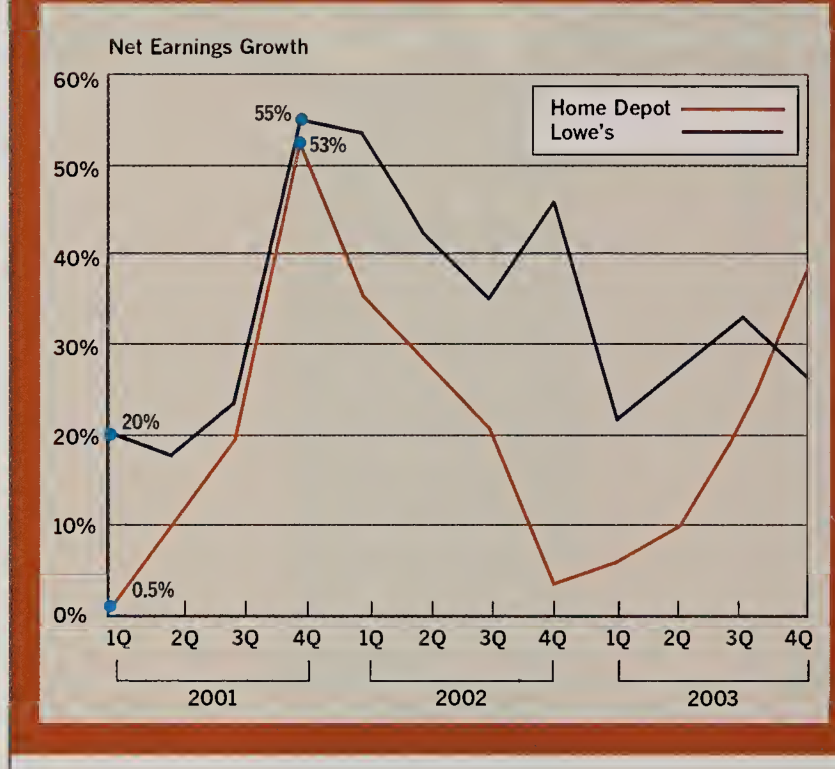
Still, self-checkout has reduced wait time by one-third across Home Depot stores, according to the company. John Simley, a former spokesman for Home Depot, says opening registers is an inefficient use of labor and argues that it can take 10 minutes to open one up.

To address the staffing issue before the lines start to form, Home Depot in 2002 launched a 48 terabyte IBM DB2 data warehouse that runs on new Regatta p690 servers and contains three years of sales history. The warehouse is intended to take the guesswork out of labor scheduling as well as inventory planning. Lowe's has had a Teradata warehouse with that functionality since 2000. Steven Baumgarten, a research analyst with Parker/Hunter, says not having such a warehouse put Home Depot at a competitive disadvantage.

DeRodes says that while the company has improved its ability to mark down merchandise and manage its margins, he couldn't quantify the data warehouse's ROI. "It's hard to say the new merchandising approach added this percent and the technology added that percent [to the bottom line]. We don't make ourselves crazy [determining those numbers] as long as we're making the right progress. Our numbers are all moving in the right direction as a company, so we know these tools are helping," he says.

Why Home Depot Is Worried

From the second quarter of fiscal 2001 through the third quarter of fiscal 2003, Lowe's net earnings growth outpaced Home Depot's



SOURCE: A.G. Edwards & Sons Inc.

DeRodes also replaced Home Depot's ancient green-screen POS system with color, touch-screen, Web-based POS terminals from NCR to move customers through checkout more quickly. The upgrade of the company's five highly customized POS systems to the NCR terminals cost tens of millions of dollars, according to DeRodes. He says the new registers have decreased the average time it takes a customer to check out from 6.7 minutes to 4.9 minutes.

"This system will give us better metrics on cashier performance," says DeRodes. "That's important because we want to train cashiers who aren't performing as well." By using analytical software to study the number of items in each customer's purchase, the type of items (are they heavy and cumbersome such as lumber or bags of cement?), and the time it takes the cashier to process the order, the company can identify if an individual cashier is unusually slow and needs more training on the register.

A Project Portfolio to Speed Customers on Their Way

Store #121 sits diagonally across the street from Home Depot's Atlanta headquarters. This is where the company is piloting a bunch of new applications collectively known as FAST (front-end accuracy and service transformation) intended to improve cashier accuracy and enhance customer service. The other purpose of the FAST projects, according to John Beasley, Home Depot's former director of operations strategy, is to close or even leapfrog the technology gap between Home Depot and other retailers like Wal-Mart and Target. Two FAST applications that will be rolled out to stores this year are an electronic product catalog, called Online UPC, and an online receipt lookup service that will be in stores this month.

Online UPC. This is essentially an electronic catalog of products that don't have bar codes on them—such as nuts and bolts, bales of hay and drywall—and therefore can't be scanned at the POS. The application runs on the POS system and is intended to replace three-ring binders filled with pictures of products, their bar codes and stock-keeping unit (SKU) numbers that every cashier has at his register. Online UPC will make determining prices on unmarked items easier for cashiers. Beasley says that while only about 3 percent of transactions require the electronic catalog, the application will save 23 seconds of customer wait time per product over the binder—not an inconsiderable amount of time when one imagines a customer twiddling her thumbs while a cashier runs a price check.

Online receipt lookup. This lets customers who've paid for merchandise using a credit card, debit card or check return an item even if they've lost or forgotten their receipt. When the customer's card is swiped, or his checking account number entered into the POS, the application searches through 90 days of transactions to find an electronic copy of the customer's receipt. This should also help the company cut down on fraudulent returns, which cost the retail industry millions each year.

Wireless scan guns. The company is in the process of replacing its corded scan guns with wireless ones that cashiers can use to ring up merchandise and that workers on the floor can use to check inventory. Although some supermarket chains and wholesale clubs such as Albertsons, B.J.'s and Sam's use cordless guns already, what makes Home Depot's unique is their two-way communication feature. For example, when a cashier scans the UPC for a barbecue grill at the checkout, the gun transmits the SKU number to the point of sale system. Using business rules, the POS identifies the product and whether it requires assembly, and sends a message back to a small screen on the gun prompting the cashier to ask the customer whether he wants Home Depot to assemble the grill for him for an additional charge. (DeRodes says he doesn't yet have numbers on the amount of money Home Depot has made through cross-selling opportunities identified by the gun, but says the scanner has paid for itself on the basis of checkout accuracy alone.) The maintenance costs for the wireless guns will also be lower than they were for the corded guns, according to Ray Allen, Home Depot's former director of store systems, who worked on the FAST projects with Beasley.

Web-based kiosks. One of the more geewhiz technologies the company rolled out in mid-2003 is its color solutions centers. These Web-based kiosks in the paint department help customers color-coordinate the rooms they're decorating. The kiosks contain a computer, a touch-screen monitor and a lens used to scan fabric, upholstery, rug or wallpaper swatches. Following prompts on the screen, a customer holds a swatch against the lens, and then the computer prints out a selection of matching paint colors. The customer can have Home Depot mix paints according to the colors on the printout. DeRodes says it's difficult to pinpoint how much sales of the company's Behr brand of paint are driven by the kiosks, but he says that customers tell Home Depot that the kiosk plays a positive role in their shopping experience.

IT'S A RETAILING TRUISM: Strategies that improve the bottom line and inspire investor confidence don't always make customers happy.

E-Learning. "If we hired every certified electrician in the United States, we wouldn't have enough people to staff our electrical departments," says DeRodes. "That's how big we are. When you get to this scale, you can't rely on the retired electrician to stand in the aisle. We have to train the people." To that end, Home Depot rolled out Web-based training courses for its 299,000 store employees in 2003 and delivered 23 million hours of Web-based training last year. The e-learning courses are delivered via dedicated PCs located in stores. They cover everything from basic sales and customer service skills to specialized product and brand knowledge. DeRodes maintains e-learning is "paying tremendous dividends in terms of higher customer satisfaction numbers."

It may seem that Home Depot under Nardelli and DeRodes is distancing itself from its past by saying the old infrastructure won't support the company's new business and expansion plans and that the IT needs to be replaced. In fact, a lot of what they're doing—including the kiosks, the wireless scan guns and the mobile ordering system—continues plans conceived by Ron Griffin, DeRodes' predecessor.

A New IT Strategy to Meet the Competition

Because individual Home Depots were responsible for keeping track of which products sold or did not sell, as well as determining how to attract and retain customers, the company needed systems throughout the '80s and '90s to help managers make these decisions. To that end, and to support the company's expansion, former CIO Griffin introduced in the early 1990s a corporate data model and an application architecture based on a set of reusable software components. The components represented different kinds of commands or functionalities, such as inventory checks and price changes, that could be plugged into new applications. This component-based application architecture allowed the IT department to create applications quickly, without having to rewrite a lot of code.

Former CIO **Ron Griffin** introduced an architecture based on a set of reusable software components that allowed IT to create applications quickly, without having to rewrite a lot of code.

PHOTO BY REID HORN

Michael Starr, who is CIO of software provider Agilisys and former senior manager of application development at Home Depot, says Home Depot always felt that its business and operations were so unique that no packaged application could provide the stores with what they needed without huge, expensive, drawn-out customizations. But as the company grew, building systems in-house became less cost-effective. As Home Depot saturated markets with stores, sales growth at individual stores began to slow. As a result, says a former Home Depot vice president, the amount of technology and manpower that Home Depot could afford diminished. "You started to see a need for a less costly organizational and systems infrastructure," he says.

Accordingly, Griffin began embracing a strategy that relied more on packaged applications. In 1999, he announced that Home Depot would implement SAP financials in South America and later in the United States and Canada to replace its aging financial system. When Nardelli took over as CEO in December 2000, the move to packaged applications became even more pronounced. Griffin (who, citing nondisclosure agreements, declined to be interviewed for this story) announced in November 2001 that he'd leave the company by the first of the new year, and many of the projects he'd announced, such as the North American SAP implementation, in-store kiosks and wireless scan guns, were postponed until Nardelli found a successor. When DeRodes took over IT in early 2002, he had Nardelli's blessing to do whatever was needed to get the company back on track, and Home Depot's IT department started to change. Former Director of Store Systems Allen says the IT department under Griffin was less strategic and more reactive to store needs. He says this was a result of being constrained by the company's infrastructure and its freewheeling operations.

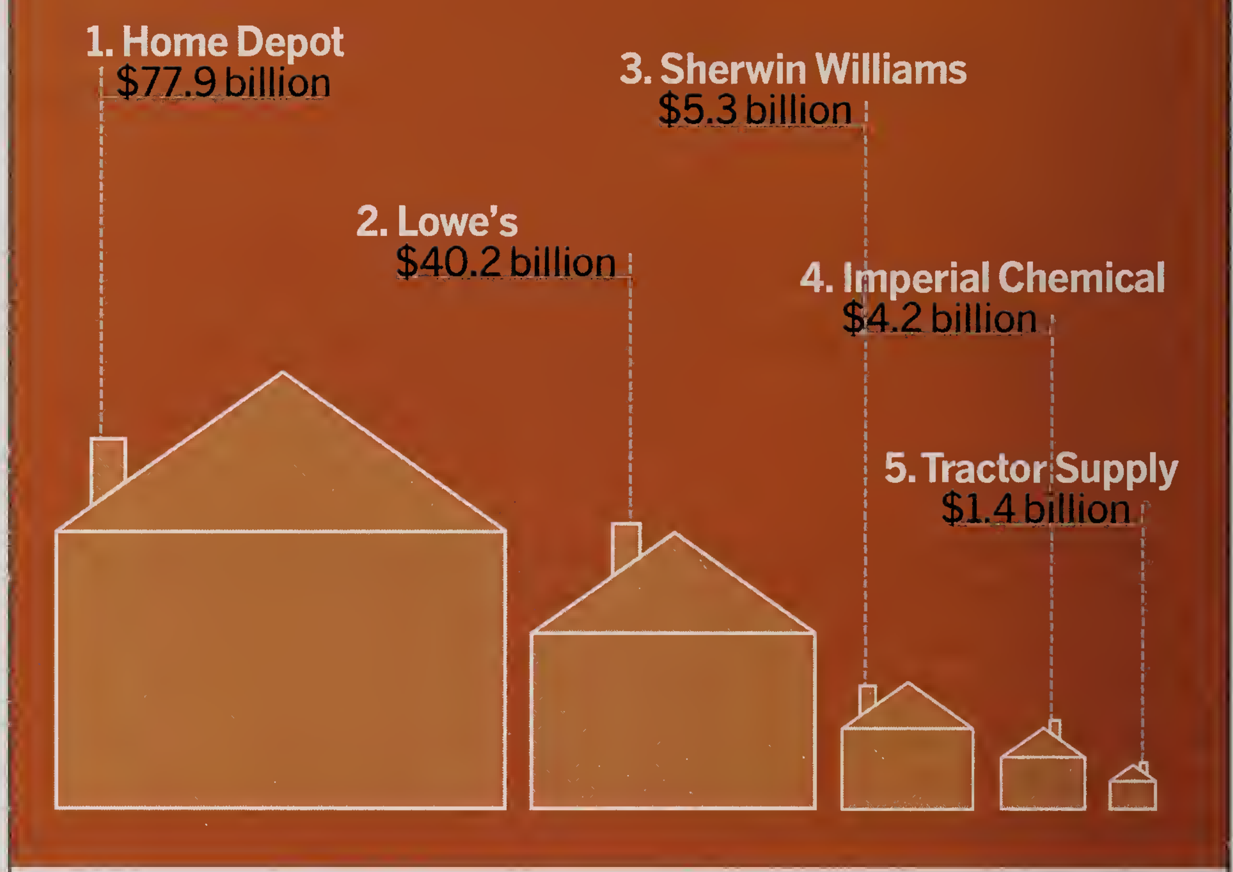
Former Director of Operations Strategy Beasley says, "I think the current group in IT is both more willing to tackle big transformational change and moving more to partner much better with the business."

High-Tech Vs. High-Touch

Along with the IT group, the notion of what constitutes good service has also changed. For years, good service at Home Depot meant high-touch service—employees interacting with customers. Now it means self-service. In the old days (which Home Depot employees refer to as the pre-Nardelli days), if a customer entered a store and wanted to know where to find drain pipe fittings, an employee would walk him to the aisle and shelf. This is part of the reason why Home Depot had few signs in its stores, says Simley. But Nardelli decreed that a thousand signs should bloom. Better signs, he believed, would be a cheap, non-labor-intensive way for the company to move customers in and out quickly and to make those cavernous spaces seem less bewildering, especially for the female customer who Home Depot was trying to attract in response to Lowe's successful appeal to women.

Home Is Where the Money Is

Top five companies in the home improvement industry, ranked by market capitalization



SOURCE: RetailNet, May 18, 2004

Today, Ray Allen says Home Depot gets high marks if customers can find things on their own (thanks to signs) and scan them on their own (thanks to self-checkout), without having to interact with a salesperson. "Service used to mean whether I can get an associate to help me. Now service means I can do it myself," he says.

But is self-service the same thing as good service? Retail Management Consultants' Whalin begs to differ. If Home Depot's goal is to get customers in and out of stores without ever having to speak with a clerk, says Whalin, "then Lowe's is going to continue to hand them their head."

With the possible exception of the two-way wireless scan guns that allow employees to cross-sell merchandise to customers, the technologies Home Depot is installing in its stores are not high on the personal touch. Lowe's is currently trying to differentiate itself from Home Depot on high touch. A big sign above the entrance to the Lowe's store in Saratoga Springs, N.Y., reads, "Lots of stuff by yourself? We'll load it." Another sign reads: "More than three in line? We'll open another checkout."

Which is not to suggest that Lowe's isn't increasingly using technology as well. At an investor conference in September 2003, Lowe's announced it would begin installing self-checkout this year. And during 2003, Lowe's created an electronic product catalog and links to its vendors through EDI interfaces. By automating the order-taking process, the company says it has reduced errors and the length of time customers have to wait to receive their orders.

Striking the Right Balance

The surest way for Home Depot to improve its earnings growth, market share and stock price is to move more products more quickly through more stores with fewer associates and lower overhead than in the past. The ability to do that hinges on increased efficiency—but also a better shopping experience for customers. Better store layouts, more signs and brighter lighting will help, and technology can too. While Home Depot is using more packaged software, the IT department still does plenty of application development in house, particularly for customer-facing technologies like Online UPC and receipt lookup. "Every time we help a customer, satisfaction goes up and so do sales," says DeRodes.

Conversely, every time a customer even *thinks* he or she needs to talk to a knowledgeable person and can't find one, satisfaction plummets. The most critical thing Home Depot needs to get right is to drive efficiency while enhancing the customer experience—and these two things don't always go together. With Lowe's hot on its heels, Home Depot's home improvement effort has got to be a home run.

Senior Writer Meridith Levinson writes frequently on the retail industry. E-mail your feedback to *mlevinson@cio.com.*

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the SCO Slugfest

Your guide to the past, present and future of the legal challenge that may change the face of the open-source revolution

BY SCOTT BERINATO

PHOTO BY GETTY ONE

It began with a simple asset inventory. In June 2002, President and CEO Darl McBride joined SCO, and, looking for ways to turn around his fizzling little Unix/Linux company, it dawned on him that SCO owned something valuable: the Unix System V source code.

At first, SCO planned to use its Unix source code to allow old Unix apps to run on the new Linux operating system. In fact, according to Chris Sontag, SCO senior vice president and general manager of the company's licensing division, SCO even briefed analysts on this strategy.

In the meantime, some Linux users had taken it upon themselves to use SCO's Unix software to run Unix apps on Linux, which was illegal for anyone but SCO to do under its Unix license. SCO devised a plan to allow these users to do so legally through a new license.

But before SCO started offering the new licenses, IBM took the wind out of SCO's sails. At LinuxWorld in February 2003, IBM senior executive Steve Mills revealed his company's plans to use AIX, IBM's own Unix platform, to accelerate Linux development. "It sounded like they would take all of AIX and put it on Linux, basically obliterating Unix," says Sontag.

SCO was alarmed. Even so, the company continued to dig into the Linux kernel's source code, as it was still thinking about ways to allow Unix and Linux to run together. In February 2003, SCO allegedly found Unix System V code and Unix derivative code in Linux kernel version 2.4.

The implications—to SCO—were clear. If Linux contained SCO's proprietary code, then Linux (which under the General Public License mandated free distribution of the code) was violating SCO's Unix license. Therefore, SCO could now challenge the legality of the Linux license, thus radically affecting not only how Linux was developed and sold, but also its viability as a corporate platform. Indeed, everyone using Linux with Unix stuck into it would, in theory, owe SCO a fee. If SCO could prove its case, it was sitting on a gold mine.

So SCO left the Linux business and entered the litigation business.

How SCO Came to Own Unix Source Code

The History of SCO

1979: The Santa Cruz Operation (SCO) founded as a Unix company

1992: SCO launches OpenServer Unix operating system

1993: SCO goes public

1994: Caldera founded by ex-Novell chief Ray Noorda as a Linux distributor

The History of the Code

1969: Unix invented at Bell Labs

1989: Bell Labs' parent company, AT&T, releases Unix System V

1991: AT&T spins off Unix Systems Laboratories (USL) but retains majority ownership

1992: Novell acquires USL from AT&T

SCO is Suing...

IBM

Claims: Copyright infringement, breach of contract, unfair competition, tortious interference
Filed: March 6, 2003
Details: This is SCO's anchor case, and its outcome determines everything—the future of SCO and the validity of the licensing terms under which Linux is distributed. SCO is now seeking $5 billion in damages.

To prevail, SCO must convince a jury that IBM knowingly mixed a derivative of SCO's code into its Linux products. That would mean that SCO's property is being given away illegally under Linux's General Public License, which mandates free distribution of source code when it's used in commercial products.

(The IBM case focuses mostly on allegations that the company improperly uses a Unix System V derivative, in this case AIX. Other allegations include the literal copying of Unix code into the Linux kernel, and "nonliteral transfers" in which Linux developers have used Unix System V methods, structures and sequences without permission or license.
Status: Both sides exchanged discovery. Case is scheduled to open Nov. 1, 2005.

AUTOZONE

Claim: Copyright infringement
Filed: March 3, 2004
Details: SCO, after sending several formal warnings, sued AutoZone, a national chain of auto parts stores, for using Linux and failing to pay SCO.

(Before the suit was filed, a general legal defense fund had been created by IBM and Linux vendors to fight SCO's suits.)
Status: AutoZone has requested a stay and also asked for the trial to move from Las Vegas to Memphis, AutoZone's headquarters. At press time, SCO was preparing a response.

NOVELL

Claim: Slander of title
Filed: Jan. 20, 2004
Details: When SCO went public with its claims, Novell responded by claiming ownership of some Unix copyrights, which Novell said could make SCO's claims invalid. SCO in turn claimed that it took ownership of those copyrights when it bought the Unix System V source code in 1995. (See "How SCO Came to Own Unix Source Code," below.)

SCO's suit here is akin to a charge of trespassing. Novell, SCO says, is trying to claim ownership of something SCO already owns. SCO is also accusing Novell of trying to stall the case and confuse the marketplace.
Status: Novell filed a motion to dismiss, which has been denied. SCO filed a motion to move from federal to state court, which was also denied. The court has asked SCO to specify the damages that have resulted from Novell's actions.

DAIMLERCHRYSLER

Claim: Breach of contract
Filed: March 3, 2004
Details: In this case SCO claims contractual violations, not copyright violations, because DaimlerChrysler is a Unix licensee and AutoZone isn't. SCO claims it gave DaimlerChrysler 30 days to certify that it was in compliance with SCO's licensing terms. SCO says the automaker still hasn't certified compliance, thus breaching the contract.
Status: DaimlerChrysler filed a motion to dismiss. At press time, SCO was preparing a response.

SCO is Being Sued by...

RED HAT

Claims: False advertising, deceptive trade practices, unfair competition, tortious interference, trade libel and disparagement, among others
Filed: Aug. 4, 2003
Details: Red Hat, an IBM partner on Linux, hit SCO with seven claims. Red Hat says that SCO's public legal campaign is based on false and misleading claims, the only purpose of which is to make customers wary of investing in Linux and thus Red Hat.
Status: SCO filed for dismissal. Judge stayed the case until the IBM case is resolved. Red Hat filed a motion to reconsider. No ruling yet.

IBM

Counter claims: Breach of contract, unfair competition, unfair and deceptive trade practices, breach of the GNU General Public License (GPL) and patent infringement, among others
Filed: Aug. 6, 2003
Details: Big Blue answered SCO's lawsuit with 10 counterclaims. IBM is charging that SCO is maliciously attacking major IBM products, Linux and Unix, which is having a damaging effect on IBM's business. IBM also says that SCO didn't provide sufficient warning before revoking IBM's "perpetual and irrevocable" license to the Unix System V code.

In addition, IBM claims that SCO itself used and sold Linux products under the GPL. In other words, IBM is saying that SCO violated the very agreement it's now accusing others of violating.

IBM also identified four of its own patents that it claims SCO has violated. In effect, IBM is saying, "You want a fight? You got it."
Status: Will be heard with original *SCO v. IBM* case starting in November 2005.

SCO Might Sue...

SGI

Details: SCO accused Silicon Graphics Inc. (SGI) of contributing Unix System V source code to Linux. In an open letter to the Linux community, SGI acknowledged some "trivial" duplications of source code and then offered patches to replace those duplications with fresh code.

SCO had also charged SGI with violating its Unix license with another piece of software, XFS. SGI denies this.
Status: SCO officials publicly state that suing SGI remains an option and the two companies have been "in discussions."

1995: SCO buys Unix System V source code from Novell along with Novell's UnixWare software platform

2000: Caldera goes public

2001: Caldera acquires SCO's Unix server and services groups; the rest of SCO becomes a separate, unrelated company called Tarantella

2001: Caldera acquires Unix source code and Unix products from SCO

2002: Darl McBride named CEO; Caldera changes name to The SCO Group Inc.

2002: The newly renamed SCO Group maintains ownership of the Unix System V source code

2003: SCO sues IBM for infringement of copyright and IBM countersues

2004: SCO sues everybody over Linux ownership

Who's Who

IN THE SCO CORNER

SCO President and CEO Darl McBride—The central figure in the maelstrom, McBride tries to focus on SCO's business and products. "In spite of the popular media saying we're the most hated company in technology, customers are fairly pleased with the direction of the company," he told *CIO*, several months before posing for the cover of *Fortune* wrapped in a printout of the Unix development history time line.

SCO Senior VP and General Manager of SCO's licensing division Chris Sontag—Bad cop to McBride's good cop. Sontag is focused on extracting license fees from users that SCO claims are in violation of its license, and he casts the lawsuits in dramatic terms: "We are not putting a lot of energy into settling. The battle lines are drawn. It's a death match. We either win or die."

Attorney David Boies—Boies accepted $1 million in cash and 400,000 SCO shares to take on IBM. Ironically, Boies once defended IBM in its 14-year antitrust suit, and he was the Justice Department's lead prosecutor in the Microsoft antitrust case. Now, his success prosecuting Linux and Unix users like IBM may contribute to the success of the company he wounded (Microsoft) and wound the company he helped save (IBM).

WHAT EVERYONE IS FIGHTING ABOUT

Unix System V Source Code—A bunch of decades-old zeroes and ones, Unix System V source code is the derivative of the original Unix work done in the late '60s at Bell Labs. A skein of derivative works makes up the Unix family tree, which, when printed out, is about 9 feet long. SCO claims it owns thousands of lines of this code, which has found its way into Linux, sometimes literally copied and pasted.

IN THE IBM CORNER

Attorney David Marriot—IBM hired the law firm that its current foe, David Boies, spent most of his career with, Cravath, Swaine & Moore. Marriot and IBM's other lawyers have been far less vocal about the case than SCO, putting out terse, narrow statements, if any at all.

Red Hat President and CEO Matthew Szulik—Matches the aggressive and apocalyptic tone of SCO's Chris Sontag. "This is a march for freedom," he told *Forbes*. "This is about a minority who are trying to hold the open-source development community hostage. We had to step forward and say, enough is enough."

Linus Torvalds, creator of Linux, and the Linux community—Torvalds has attacked SCO as "a company that seems to have squandered all of its money...and now seems to play the U.S. legal system like a lottery." Torvalds is usually a reluctant leader of what some call a movement toward open-source software; but, in this instance, he matched the fiery disposition of the rabid network of open-source developers that make up the Linux community, well-known for its ability to mobilize against those who are critical of Linux and open source. The community considers open-source software technically and morally superior to proprietary code.

Conspiracy Theories

Some people see larger forces at work behind the blizzard of SCO-related lawsuits

Microsoft is behind SCO.

When SCO began claiming ownership of the Unix System V source code, Linux advocates started whispering that the owner of Windows, Microsoft, wanted the Linux market to stall, and was, in effect, financing SCO.

SCO officials have acknowledged that Microsoft is a "significant customer," accounting for 25 percent of SCO's $79 million in revenue (and $5.4 million in income) in 2003.

BayStar Capital, a private investment firm, also invested $20 million in SCO (in a preferred stock purchase) in late 2003, and then recruited Royal Bank of Canada to invest another $30 million. Shortly thereafter, a memo from a consultant to SCO executives became public, claiming that BayStar invested in SCO on the recommendation of Microsoft, and that Microsoft would like to use "BayStar-like entities to help [SCO] get significantly more money."

SCO spokesman Blake Stowell responded in a statement: "We believe the e-mail was simply a misunderstanding of the facts by an outside consultant. Contrary to the speculation, Microsoft did not orchestrate or participate in the BayStar transaction." Microsoft similarly denies orchestrating the deal.

BayStar considered pulling its investment in March 2004. After negotiations, SCO gave BayStar $13 million in cash and let it convert its preferred shares to common stock, which Royal Bank of Canada had already done.

No, Sun Microsystems is behind SCO.

After Microsoft, SCO's next largest customer is Sun, which accounted for 15 percent of SCO revenue in 2003. (SCO notes in public documents that no other vendor besides Sun and Microsoft accounted for more than 10 percent of its total revenue.) But why would Microsoft's archrival help SCO?

The answer is Solaris, Sun's Unix operating system, which has suffered severely—arguably more so than Windows—due to the rise of Linux as an alternative. Linux is the enemy of Solaris. SCO is the enemy of Linux. The enemy of my enemy, the saying goes, is my friend.

And IBM is behind Red Hat.

SCO Senior VP Chris Sontag suggested in an interview with *CIO* last year that IBM uses Red Hat to distribute Linux in order to shield Big Blue from liability issues. In fact, IBM's Linux guru Karl-Heinz Strassemeyer was quoted in *The Register* saying, "We don't want to take the risk of being sued for a patent infringement. That's why we have distributors."

"In the meantime, they benefit on hardware and services sales," Sontag said, calling it "a great scam."

In the Know About SCO

Some useful points to help you navigate the legal morass

Q. Why would SCO sue its own customers?
A. This is similar to the record industry suing people for downloading music for free. SCO claims that people are using SCO code without paying for it.

Q. That sounds clear. It's their intellectual property, so they ought to be paid for it, right?
A. It's not that simple. First, while it's clear when someone steals a song, because you can hear it played, it's not as clear when code has been stolen, because it's hidden within millions more lines of code. Also, with open-source projects, where code could come from any developer, it's sometimes hard to tell its origin.

Q. Isn't it the responsibility of the people who make the product to have some sort of accountability system so that if someone does cheat by plagiarizing code, that person or group can be identified?
A. Probably. That's why Linus Torvalds recently sponsored a measure that would require anyone who works on Linux to sign a Developers Certificate of Origin in order to document who contributed what to Linux. This is not an admission of guilt on the part of Torvalds or Linux developers, but a recognition of the need for accountability.

Q. Wouldn't it behoove a small company like SCO to settle and not sink millions into a years-long battle?
A. Legal experts say the goal should always be to settle. That seems highly unlikely under the present circumstances. Both sides are using the language and tactics of a moral or holy war. SCO is claiming the General Public License is unconstitutional. Red Hat is claiming SCO is holding Linux hostage. Lawyers are supposed to try to settle; no one here seems to want settlement.

Q. Should I hold off investing in open source and Linux?
A. On the one hand, if SCO wins its cases, it would likely be entitled to licensing fees and other reparations. SCO winning would also affect Linux development and open-source licensing in unknown ways. On the other hand, Linux vendors have offered indemnity to users, the case will likely last years (it doesn't start until late 2005), and an SCO victory is not at all certain. Only you can measure the risk you're willing to take.

Love Letters, HATE Mail and Hacks

The SCO lawsuits have stirred powerful emotions among all the major players and outsiders as well

Epistolary Exchanges SCO has sent a series of what it called "Love Letters" to various constituencies (licensees, Fortune 1000 companies, Congress, among others) explaining its case. In one such letter, SCO President and CEO Darl McBride wrote to the Linux community: "A sustainable business model for software development can be built only on an intellectual property foundation." Open-source community members replied, "Your offer to negotiate with us comes at the end of a farrago of falsehoods, half-truths, evasions, slanders and misrepresentations. [Linux] is not yours, has never been yours and will never be yours."

Hate Mail SCO receives a steady stream of hate e-mail from fringe elements of the Linux community. One printable missive said: "I bet you didn't even consider the resolve of thousands of programmers and geeks when you decided to hijack Linux. Well, you picked the wrong fight because nerds and geeks THRIVE on showing someone that they are wrong."

Hacks Hackers have continually attacked SCO's website, most successfully in late January when a virus called MyDoom specifically targeted SCO's network. MyDoom used thousands of zombie computers to knock SCO offline and slow Internet traffic in general. SCO was forced to temporarily change its home URL.

At press time, we learned...

- In April 2004, SCO laid off nearly 10 percent of its 275-person workforce.
- SCO revenue in the second quarter of '04 took a 53 percent nosedive; licensing revenue dropped 99 percent from $8.25 million the same quarter a year ago to $11,000 this year (SCO says this is a reflection of the fact that licensing revenue is not predictable and will go up and down); SCO's quarterly net loss was $9.4 million.
- SCO in June announced five new UnixWare, OpenServer and other Unix-based products. They don't run on Linux.

More on Open Source

WHERE'S THE OPEN-SOURCE REVOLUTION TODAY? Check out our online resources that present the only real-time way to keep up with the SCO-Linux debate. Find the links in the online version of this article or at **www.cio.com/printlinks.**

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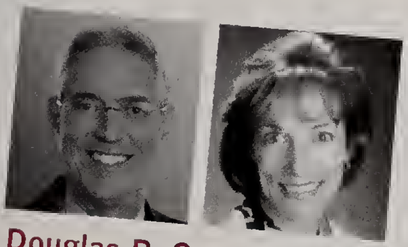
Closing Keynote

The Honorable **Madeleine Albright**, Former US Secretary of State, provides unique insight into the serious struggles throughout the world today, and America's role as a defender and promoter of freedom.



Douglas R. Conant, President & CEO and **Doreen A. Wright**, CIO, The Campbell Soup Company on **The CEO/CIO Partnership**.

Steve Bandrowczak, Executive Vice President & CIO and **Ronald Kifer**, Vice President, Program Management, DHL Express on **Offshore Outsourcing Models**.

Jeffrey Garten, Dean of the Yale School of Management, Author and Business Week Columnist on **The Global Economy and Business Agenda**.

Gregor Bailar, Executive Vice President & CIO, Capital One Financial Corporation on **The New IT Workforce**.

Abbie Lundberg, Editor in Chief, *CIO* Magazine on **The 2005 CIO Agenda**.

Chris Lindquist, Technology Editor, *CIO* Magazine on **The Technology Agenda: How to Leverage the Best of the Emerging Technologies**.

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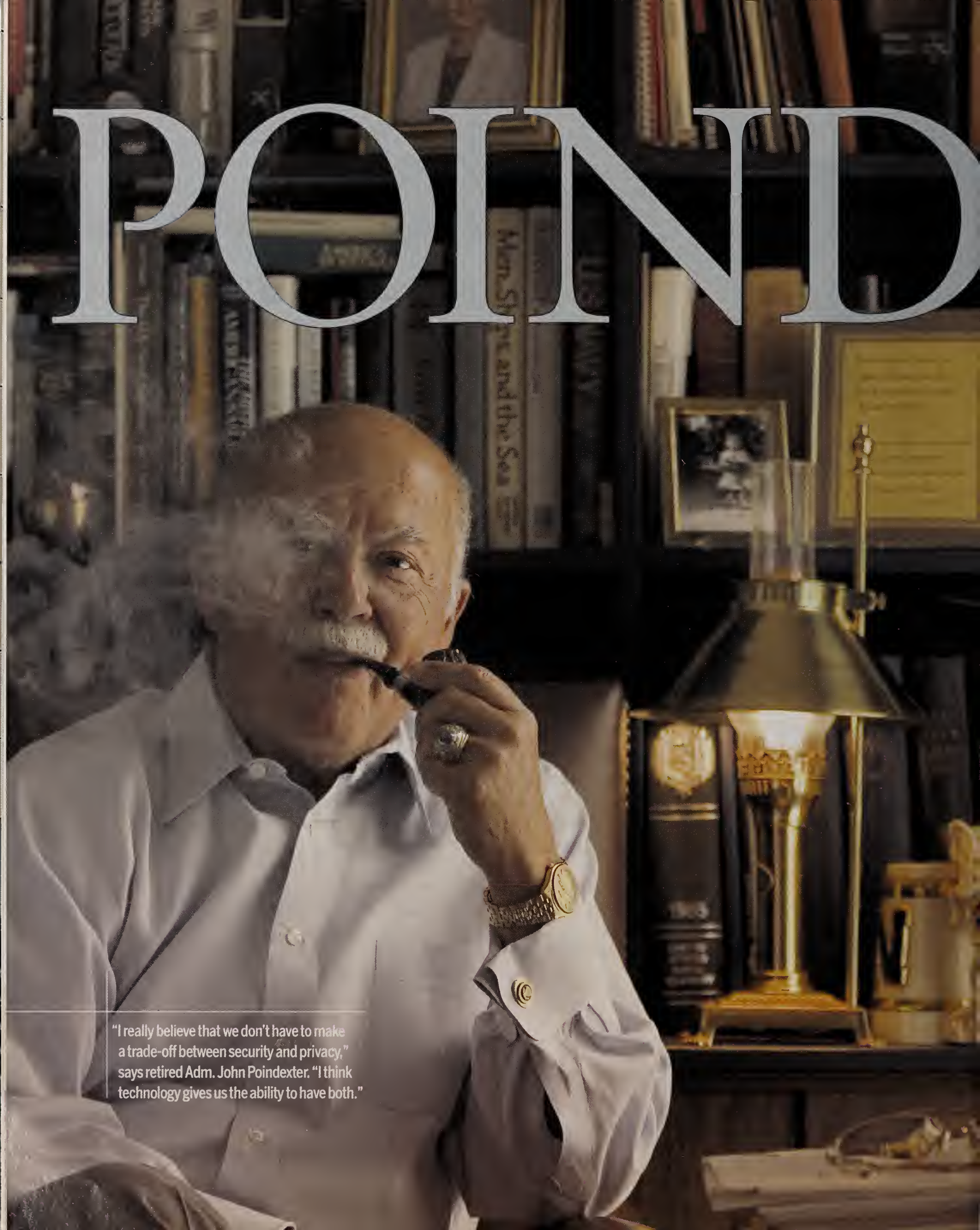
Men, Ships and the Sea

"I really believe that we don't have to make a trade-off between security and privacy," says retired Adm. John Poindexter. "I think technology gives us the ability to have both."

EXTER
COMES IN FROM THE COLD

The man behind the government's canceled antiterrorism Total Information Awareness program explains for the first time what went wrong and how, in fact, it may not really have been canceled after all

BY SCOTT BERINATO

Retired Adm. John M. Poindexter still slips into the present tense when he talks about Total Information Awareness (TIA).

He does this despite the fact that he resigned from the Defense Advanced Research Projects Agency (DARPA) a year ago amid controversy, despite the fact that DARPA subsequently dissolved the Information Awareness Office (IAO) he had built, and despite the fact that DARPA ostensibly canceled TIA, the wide-ranging program to use technology for gathering intelligence to combat terrorism. Poindexter, however, still believes in TIA. In fact, he maintains that TIA hasn't really gone away; it's just gone undercover. And he says that means that America may end up with less effective (but even more invasive) antiterrorism technologies.

When Poindexter spoke about TIA at the CSO/CIO Perspectives conferences in April, in Carlsbad, Calif., it was his most detailed public discussion of the program since leaving DARPA.

He used the opportunity not only to promote the concepts behind TIA, but also to respond to criticism from Congress, the media and persevering privacy advocates.

"The 9/11 Commission is identifying the exact problems that we were trying to get technology to solve. So I keep pushing the idea," Poindexter says.

And as he pushes, programs such as TIA negotiate the roiling waters of public debate. Can the United States strike a balance between the government's need to know and individual privacy? To what extent can and should citizens be informed about the intelligence activities and tools that penetrate their lives?

These are some of the questions we were eager to put to Poindexter.

PHOTOGRAPHY BY DRAKE SOREY

TIA: The Origins, the Mission

The spark for TIA was John Hinckley Jr.'s 1981 assassination attempt on President Ronald Reagan. Poindexter, then a White House military assistant (he became national security adviser in 1985), says that got him and others thinking about "crisis preplanning." Poindexter set up a crisis preplanning group at the White House, and its deliberations soon shifted to the larger issue of terrorism. The group considered the possibility that ambitious data analysis might reveal the outlines of future events. But after the Iran-Contra affair and Poindexter's role in the scandal came to light in the mid-'80s (he was convicted in 1990 on five felony counts, including lying to Congress; the conviction was subsequently overturned), crisis preplanning strategy languished.

In 1996, however, DARPA issued a Broad Agency Announcement or BAA. The BAA stated that DARPA wanted to develop information technologies that would help "identify potential future crises and our options for preemption and prevention."

Eventually, the BAA led to Project Genoa. Launched in 1997, this effort (which later morphed into TIA) was intended to collect many projects under one umbrella. The data mining application that most people associate with TIA was simply one of the featured projects.

In large part, the I in TIA refers to information about transactions. Terrorist operations require preparation. Preparation can be viewed as a collection of transactions—even everyday, innocuous ones such as buying an airplane ticket or registering for flight school. It also can include more suspicious ones, such as the purchase of large amounts of fertilizer or a crop duster.

The problem, of course, is that the few evil transactions are embedded within the many innocent ones. "It would be ideal if we could have an uncontrolled flow of information," says Poindexter, meaning ideal from an intelligence community perspective. "But we realized you can't do that." So it was understood within Project Genoa that technology would need to be developed that would look for patterns of activity that fit the intelligence community's profile of suspicious behavior.

Within a year of Genoa's launch, it had become clear to Poindexter that the technology's most important work would be to help preempt asymmetric threats: the use of unconventional weapons and tactics against overwhelmingly superior military force—what Poindexter calls "the new terrorism." The term Total Information Awareness was first presented publicly in early 1999. From 1997 through 2002 Genoa, including the project that would become TIA, received $42 million in funding.

Then came 9/11. Some Project Genoa managers felt the technology they were working on could have prevented the tragedy. Poindexter is more circumspect. "Now, I don't think I would say that officially. But certainly I felt a great frustration that we had not been able to avoid 9/11," he says. After the tragedy, he suggested that DARPA establish an information awareness office and invest a significantly greater amount of money in the effort.

> "The 9/11 Commission is identifying the exact problems that we were trying to get technology to solve."
>
> –JOHN POINDEXTER

The Debate over TIA

Poindexter joined DARPA to head the Information Awareness Office in January 2002. Anticipating controversy surrounding him and the program, he says he felt it was important to move quickly. So he suggested something radical for DARPA: Develop the technology *and* the policy to govern its use in parallel, thus avoiding the possibility that policy concerns could be used to kill the project.

Poindexter saw privacy as the mother of all objections. "I knew from the beginning that privacy was going to be a huge issue, especially with regard to applying Total Information Awareness in counterterrorism," he says. "Because if the technology development was successful, the logical place to apply it was inside the United States."

So, according to Poindexter, part of the early policy development was to initiate a "reasoned, open public discussion of the privacy issues." But in Poindexter's opinion, that never happened. Instead, TIA was pilloried as an Orwellian nightmare.

"A lot of our critics feel that the way that you preclude some future policy that you don't particularly like is that you prevent the technology from being developed," he says. "And I think that's a very serious problem—the idea that if you limit technology development, then that's the policy."

In addition to the media painting the project with broad strokes, Poindexter charges that some of the reporting was just wrong. He says, for example, that he never intended to build a single, central database to collect data on every transaction by every American. Architecturally, he thinks it's a poor idea. Ditto the idea of warehousing all of this transaction data.

Although Poindexter grew accustomed to being cast as an evil genius hell-bent on invading citizens' privacy, he feels it's a bad rap. "Uncontrolled access to data, with no audit trail of activity and no oversight, would be going too far," he says. "This applies to both commercial and government use of data about people."

As to potential abuse of such a system, Poindexter allows that while it's a "legitimate concern," it's not a technology issue. "It's a policy issue," he says.

The End of TIA

But it wasn't policy that killed TIA; it was the "FutureMAP" project.

FutureMAP was an experiment to gauge whether an exchange where terrorism experts could bet on potential future national security events might have value in predicting their likelihood.

The idea is that if you give a group of people an economic incentive to make accurate predictions, their collective wisdom, reflected by their aggregated choices and driven by the profit motive (either in the elevation of their reputations or in the form of a monetary award for being right), will be superior to any individual's. Such exchanges have proven to be somewhat effective in other areas, such as predicting telecom policy.

One of the contractors working on a part of FutureMAP posted on its website a number of possible events, including the assassination of Yasser Arafat, the overthrow of the King of Jordan and a missile attack by North Korea. Critics immediately pounced, calling FutureMAP an online casino where people gamble on (and profit from) death and disaster.

"I think the concept [of a futures market] is clearly sound," says Poindexter. Give smart people with information an incentive to be right, and they will be more right than if they have no incentive. And if it proved successful, it probably would have been implemented in a couple of ways. "One would be open markets on some questions and closed markets, maybe within the intelligence community, on the more sensitive kinds of questions. The problem we were struggling with within the closed market was what the incentive would be. You probably don't use dollars. You probably have some other incentives. But those are all questions that needed to be explored," he says.

But they wouldn't be. After FutureMAP was outed in the summer of 2003, and the assassination futures cited ("We never would have approved those questions being put out to the public," Poindexter says), the reaction was furious. Sens. Ron Wyden (D-Ore.) and Byron Dorgan (D-N.D.) wrote to Poindexter: "Spending taxpayer dollars to create terrorism betting parlors is as wasteful as it is repugnant. The American people want the federal government to use its resources enhancing our security, not gambling on it."

Poindexter resigned two weeks later. He denies that the furor caused his resignation. He insists that he had been planning to leave anyway.

The Value of Starting Small

Before Congress pulled the plug on its funding, the Total Information Awareness project taught its IT staff the value of doing projects on a small, iterative scale

Before the Total Information Awareness (TIA) project was dissolved, it had made progress on several fronts. It created "Vanilla World," a simulation not unlike the popular Electronic Arts Sims computer game. Vanilla World had two million "people," including terrorists, making transactions. The goal of the simulation was to see whether patterns of suspicious transactions would rise up above the noise of normal activity. Other projects were developed and readied for testing in an operational setting.

"TIA was being used by real users, working on real data—foreign data," retired Adm. John Poindexter says. "Data where privacy is not an issue. And those using it were working on real problems. And the experiment's metrics were being measured so we could figure out whether the technology was really helping or not. We also got feedback from users on what needed to be modified."

In other words, TIA was a typical IT project. But Poindexter believes it was designed better than most big IT projects, because it focused on iterative development of the systems.

"That's the way you develop these big systems," he says. "You do it on a small scale. And you accept failure as a possible outcome of some of the experiments. If you don't get failures, you're not pushing hard enough on the objectives." *–S.B.*

After the Fall

"I think if I had to do it over again," Poindexter says, "I'd do it the same way. I would just put more resources into getting the public diplomacy part stronger. DARPA has a $3 billion budget, and there's a single public affairs person and a single legislative affairs person. There's no full-time [legal] counsel. I think it's a significant problem if DARPA is going to continue to take on controversial issues. A full public affairs staff, a legislative affairs staff, a legal staff has got to be on hand."

Poindexter remembers one area where a bigger support staff could have helped: his own TIA presentation. There was, for example, a diagram of a TIA project with a little box in the middle: "a filter," Poindexter recalls. "And the purpose of that filter was very complicated, but essentially it was to provide privacy protection. But we didn't make it very big, and it wasn't really clear what it was for."

Without the filter, the project, Poindexter acknowledges, "*was* a scary thing. So one of the things that we should have done—I should have done—was to be much more sensitive to the privacy issue. I should have tried to be more precise in talking about it. Explain it in bigger detail, and put it up in flashing lights.

> **"I knew from the beginning that privacy was going to be a huge issue. If the technology development was successful, the logical place to apply it was inside the United States."**
>
> –JOHN POINDEXTER

"I really believe that we don't have to make a trade-off between security and privacy," says Poindexter. "I think technology gives us the ability to have both. The reasoned, open public discussion that I wanted to achieve is finally beginning to take place. But unfortunately, in my opinion, Congress overreacted, for political reasons."

Gone but Not Forgotten (and Maybe Not Even Gone)

Poindexter speaks of TIA in the present tense because some of its projects (according to him and other sources) are indeed continuing. He claims the work has been moved to classified—or "black"—parts of the defense budget, where it's free from public scrutiny.

Ironically, he argues, the dissolution of TIA was, in effect, a defeat for privacy advocates because the projects they opposed have now gone underground, choking off public debate.

"I quote language from the defense appropriations bill, which is unclassified. What it says is that we're going to close down the Information Awareness Office. But, oh, by the way, some of the parts are not controversial, and we're going to move them into the classified annex of the budget. And where they move them is classified. Exactly what they do is classified," Poindexter says.

[Ed note: The language Poindexter is referring to is this: "Notwithstanding any other provision of law, none of the funds appropriated or otherwise made available in this or any other Act may be obligated for the Terrorism Information Awareness Program: Provided, that this limitation shall not apply to the program hereby authorized for processing, analysis, and collaboration tools for counterterrorism foreign intelligence (our emphasis), as described in the Classified Annex accompanying the Department of Defense appropriations Act, 2004, for which funds are expressly provided in the National Foreign Intelligence Program for counterterrorism foreign intelligence purposes. Ref: [1] Section 8131.(a) of Fiscal Year 2003 Defense Appropriations Act."]

"So, what Congress has done is that they've stopped the research in the privacy protection area and, in my opinion, that eventually is going to be a problem for the administration," says Poindexter.

"The privacy work was part of what was canceled. But I think it should continue. And I think that eventually it will be continued. I'm an optimist."

Senior Editor Scott Berinato can be reached at *sberinato@cio.com*.

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The EXECUTIVE'S GUIDE TO UTILITY COMPUTING

BY CHRISTOPHER LINDQUIST

Pay-as-you-go computing means a lot of things to a lot of people. Use our pass-along guide to explain to your CEO what it is—and is not.

Reader ROI

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In the interest of making the CIO's life a little easier, we provide this pass-along guide to help CEOs understand whether their company should be on the utility computing path.

ILLUSTRATIONS BY BRIAN STAUFFER

Stauffer

WHAT IS UTILITY COMPUTING?

Pinning down a definition of utility computing can be like tying a knot in a snake; just when you think you've done it, the bugger slithers away.

Nearly every major vendor, and a number of minor ones, are promoting their own vision and brand name for utility computing, including Agile Computing, On Demand Computing, N1 and the list goes on. But beyond branding, utility computing is about providing flexible computing resources when and where they're needed. These resources could come from a pool of computing power and software that lives inside a corporate data center, and is metered out and billed to departments as needed. External service providers also offer such resources, akin to how Salesforce.com currently sells subscription CRM services: You pay for them while you use them or turn them off and don't pay another dime.

"You can provision less and still have the safety margin [to handle unexpected spikes in demand]," says Mike Prince, CIO at Burlington Coat Factory, which is currently moving to a utility computing model built around Oracle databases and clusters of Intel-based hardware. With its prior setup—four separate Unix servers—Burlington had multiple pools of computing resources, with every one of them being bigger than necessary. "None [of the servers] peak or load at the same time of day, day of the month or season of the year. You don't need a 20 percent sludge factor on every single system."

That sludge factor varies dramatically from company to company, but a recent report, "'Pay As You Go' IT Services," by analyst firm Saugatuck Technology, states that businesses often have 50 percent or more surplus IT capacity. Utility computing promises to either get rid of that expensive overhead completely or put the surplus to work.

WHY IS UTILITY COMPUTING TAKING SO LONG TO ARRIVE?

Most of the major hardware vendors—including IBM, Sun and Hewlett-Packard—offer some form of physical infrastructure for utility computing already (such as HP's Utility Data Center). But in order to work, utility computing requires a coordinated effort between hardware, applications and management software that can perform tasks such as tracking pools of computing resources. The hardware and management software has arrived, at least in early forms, but it's all still largely in the trial stage for many enterprises. And getting a company ready for utility can take some serious effort.

In today's typical nonutility scenario, a user places a request with an application on a departmental server. The server takes the request and returns the answer, then goes on to other requests. If no other requests are in the queue, the machine sits quietly and acts as a hyperexpensive space heater.

With utility computing (at least in its end-game form), that departmental server may go away entirely, usurped by a collection of machines centrally controlled by the IT department. This could be accomplished either by physically replacing remote servers with a centralized larger server, cluster of smaller servers or rack of blade servers, or by binding the remote systems into a "grid." (For definitions, see "A Glossary of Utility Terms," this page.) When the user makes a request, a series of questions must be answered by the utility infrastructure, determining what resources the user gets from the pool while tracking usage

A GLOSSARY OF UTILITY TERMS

Demystifying some terms associated with utility computing

Autonomic computing: The IBM-promoted idea that computer systems should be "self-aware" and able to repair, reconfigure, protect and reallocate themselves with minimal or no human intervention.

Clusters: Groups of computer systems tied together to act as a single computing unit. Clusters are often not geographically distributed, nor can machines be added or removed on an ad hoc basis.

Grid computing: The concept of connecting arrays of smaller computers into a single virtual supercomputer. Grids often involve large numbers of geographically dispersed machines that fall out of or are captured by the grid as they become available. Grid is largely used today as an inexpensive alternative to supercomputers, for research and scientific projects.

Pay as you go: The concept of paying for computing power on a metered basis rather than simply buying a piece of hardware and a software license.

Software as service: Rather than purchasing a software license for a number of users or CPUs and then "owning" that software for some predetermined time, software-as-service agreements allow users to pay for a piece of software on a per-user basis.

Virtualization: The act of pooling servers or storage into a larger "virtual" resource. Rather than knowing exactly which machine or hard drive will be used, users simply request enough space and computing power from the pool to perform a given task. The goal is to increase utilization levels and reduce costs.

–C.L.

UTILITY COMPUTING is about providing flexible computing resources when and where they're needed. You pay for them while you use them or turn them off and don't pay another dime.

for billing purposes.

Such a level of flexibility and tracking requires management tools that are currently in their infancy, which explains why not every company is jumping on the utility bandwagon (basing your company's IT life on a bunch of relatively untried tools is only for the very brave or the foolhardy). But the real holdup for utility computing is that application providers have yet to move en masse toward UC-ready licensing models. "The software licensing models in particular are currently the barrier to utility pricing models," says Corey Ferengul, senior vice president at Meta Group. Ideally, utility computing pricing models would allow customers to pay "by the sip," much as we do with electricity and water. But software vendors are still predominantly selling their products on a per-seat or per-CPU basis, regardless of how much or how little an individual seat or CPU is utilized.

Vendors are reluctant to move to utility pricing for several reasons, with fear being the biggest factor. A large migration to utility pricing would likely change the Wall Street valuation of software companies dramatically—almost certainly on the downside as vendors would no longer be able to book projected future revenue, but instead could claim only what they collect each month. Utility computing also promises to make it easier for companies to switch software vendors, encouraging healthy competition and reducing margins.

But Ferengul notes that smart software vendors could eventually take advantage of what may look like a bad situation, moving to a utility pricing model and locking in customers despite utility's touted flexibility and ease of vendor switching. "[With utility computing] my goal would be to deploy quickly, in hours or days, not weeks, months or years," Ferengul says. "You're not going to stop and evaluate vendors every time."

And like it or not, utility will arrive, he adds, with hardware vendors pushing it as the new model for delivery, and users pushing for software models that match their hardware.

HOW DO I CUT THROUGH THE HYPE TO REALIZE THE PROMISE?

Ask any IT vendor if they have products for utility computing, and they'll likely say yes. But believe it or not, they won't always be telling the truth. Here are two common misconceptions:

It's more than outsourcing. Handing over your entire data center to an outsourcer and paying it to run your applications on its servers is not utility computing. The key to utility is per-use pricing. Few outsourcing deals offer this option; IBM's much ballyhooed, 2002 multibillion-dollar deal with American Express is a notable exception. If your users don't utilize any computing resources for a month, and you still get a bill from your outsourcer, it's not really utility.

It's more than virtualization. Virtualization is the act of consolidating server power and storage space into shared pools. In a virtualized system, you may not know exactly what machine is running your database query or on what disk your quarterly report is stored. Those details are handled by software. This is a big step toward utility, but it doesn't go all the way. In an ideal world, UC allows IT departments to bill users for exact usage—per minute, per transaction or the like. Determining exactly what those units should be is one of the big questions that remains to be answered.

That's not to say that some companies won't opt for the completely external model. When American Express outsourced $4 billion worth of IT operations to IBM, the transaction was hailed as possibly the first large-scale utility computing arrangement. In reality, the deal was remarkably similar in scope to any other multibillion-dollar outsourcing arrangement. What differed wasn't the technology, but the pricing model. Instead of paying a flat rate, AmEx would in some cases pay only for usage, providing significant cost savings. AmEx Executive Vice President and CIO Glen Salow has claimed that there's potential for "hundreds of millions of dollars" in savings from implementing the utility model.

SENIOR MANAGEMENT'S JOB will be to smooth ruffled feathers as departmental servers evaporate into a pool of resources that are controlled by the IT department or outsourced to service providers.

IS THERE ANYTHING REAL ABOUT UTILITY COMPUTING THAT CAN BE USED TODAY?

Yes, but you need to choose wisely. For example, utility is likely to prove most beneficial in situations where certain high-cost applications get used relatively infrequently. Two companies may run the same engineering package, for instance, with each needing five seats. But one company might use the package once a month, while the other runs it 24/7. For the low-use company, utility pricing would probably appeal because the company wouldn't have to pay full license prices for a rarely used product. But the high-use company would likely do better with standard, per-user licenses.

In addition, certain applications don't lend themselves well to utility. "We're not trying to replace everything out there," says Joe Heasley, CIO at industrial products manufacturer Gates. He notes that some applications—such as CAD software—simply perform better on local servers than over a wire.

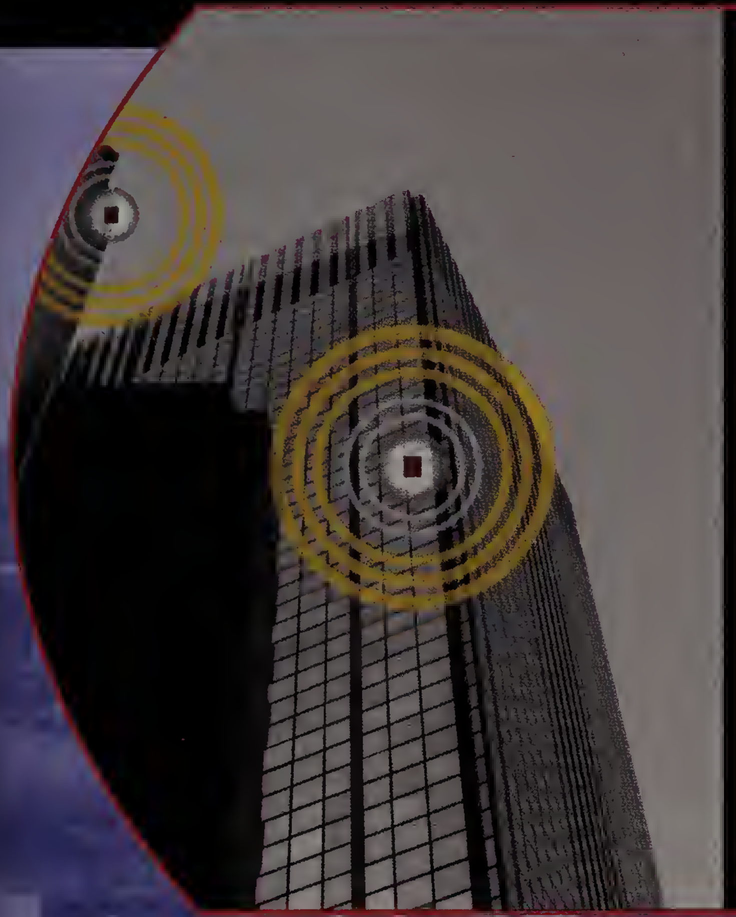
But in cases where a single application can be shared among multiple groups or where applications face regular peaks and slow periods, utility could be a cost-efficient solution. From there, you need to select the proper approach for your company's situation.

Consolidation is one way to go. Last November, Gates began a move from a distributed-server environment to a centralized HP Superdome system that includes HP's Instant Capacity on Demand (iCOD) feature. With iCOD, Gates can turn on extra processors as needed (and turn them off when the load drops), at a reduced cost. "We decided that consolidation—moving to an environment that is partitionable, virtual and has workload management capabilities—gave us the ability to take that combined horsepower and wield it where we need it, instead of being shoehorned into individual machines," says Heasley. In other words, if a certain application suddenly needs more resources, the new system enables Gates to floor the accelerator and have the business respond.

The Gates project was anything but small. It involved identifying some 42 applications—and their associated hardware—that were prime for consolidation, including custom ERP applications at its Mexico-based manufacturing facilities. In fact, Gates decided to use the Superdome systems to host all of its Mexican computing resources remotely. "We were able to leverage our infrastructure here without adding infrastructure or data centers or outsourcing in Mexico," Heasley says. And under the new model, Heasley's team can redistribute computing power as necessary from a central location. It's worked so well, Heasley says, that the company is currently working on consolidating all of its ERP systems—in Mexico, the United States and Canada—into a single instance of Oracle ERP at headquarters.

For many companies, utility computing will arrive in the form it did at Gates—disguised under names like "virtualization" and "consolidation." As servers and storage become consolidated, IT will need tools to better manage workloads and increase efficiency: the mantra of utility.

Hosted services, meanwhile, present another approach—one that takes the servers out of your hands entirely. Four years ago, Royal Caribbean Cruise Lines began using Akamai Edge



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computing services for distributing online advertisements because it made more economic sense than trying to build a geographically dispersed server network. Then, two years ago, RCCL launched a successful advertising campaign that increased its normal load by four to five times as customers logged on to investigate cruises. "I had 18 servers and needed to scale up to 30," says Mike Sutten, vice president of IT at the company. "I have pictures of some of our technicians with servers in their hands running down the hallway." Techs were even forced to cannibalize other projects to keep the website running.

As a result, RCCL shifted more of its Web operations to Akamai's servers, culminating in the piloting of some J2EE applications to Akamai's globally distributed network of IBM WebSphere servers—for which RCCL pays for usage only, not software licenses. Those applications currently access data that resides on RCCL's in-house servers. But that could change, as RCCL gains experience with Akamai and as Akamai rolls out new offerings, Sutten says.

HOW CAN THE CEO HELP US IN ADOPTING A UTILITY COMPUTING MODEL?

If utility is to take hold, cultural change will be a key challenge. By its very nature, utility requires centralization and the sharing of resources in a manner that many companies won't recognize. Senior management's job will be to smooth ruffled feathers as departmental servers evaporate into a pool of resources that are controlled by the IT department or outsourced to service providers.

And the reverse can also be true, with IT managers getting peeved when line-of-business leaders request utility services instead of IT assistance, says Mike West, senior program director at Saugatuck. "In general, the person who is most enthusiastic about [pay as you go] is the line-of-business person who has control of his P&L but not his IT," West says. "On the other hand, CIOs are highly skeptical of [the model]." The reasons, West says, are that CIOs are often averse to the additional risk that new technologies can introduce and because they see themselves as technology gatekeepers.

Given that, the CEO and other C-level executives must step in to act as mediators between IT and the line-of-business managers. "If you're going to do things to get shared resources [such as utility], you've got to bring those resources together," says Jonathan Eunice, an analyst at Illuminata. "That's why the CEO or COO or CFO at a minimum have to have a say."

WHAT IS THE ROI FOR UTILITY COMPUTING?

The bottom line, of course, is money. Utility computing promises lower licensing costs by consolidating multiple instances of applications into fewer licenses, and—once pricing models are in place—allowing companies to pay only for the active hours, transactions, megabytes or bits (the exact unit remains to be determined and will probably vary by application). It also promises reduced maintenance costs, with outsourced UC services handling some operations and internal IT groups freed from laborious tasks such as upgrading countless remote servers one by one. And, as in Royal Caribbean's case, smaller hardware budgets are possible, thanks to fewer servers and fewer people required to manage them. The ultimate goal will be to create a technology framework for a truly agile enterprise, allowing business processes to be rebuilt on the fly to meet new opportunities.

But that may not matter so much at companies that already run a tight IT group. "If you've got an organization that has a good centralized policy base, that has strong governance on change management and how they grow their IT infrastructure, if there's communication between business units and IT, then the utility model is probably not going to be as attractive to them," says Gartner Principal Analyst Eric Goodness. Loosely regulated IT organizations, however, could probably benefit from utility's simplification and control. Unfortunately, however, those organizations are going to be the least prepared for a move to utility. "If you've got anarchy, you don't know what your unit costs are now," Goodness says. "It is going to take some up-front elbow grease to get [these companies] where they want to be." Without such preparation, he notes, utility computing may actually cost more than current operations.

Still, certain niche utility markets, such as telecom management services, are also proving cost-efficient for their users. "I'm talking with customers that are saving as much as 30 percent off their corporate telecom spending [using such services]," says Goodness.

"It does work, and it's available right now," says Burlington's Prince. "It just takes more engineering than it ought to." CIO

> **THE ULTIMATE GOAL** of utility computing will be to create a technology framework for a truly agile enterprise, allowing business processes to be rebuilt on the fly to meet new opportunities.

Technology Editor Christopher Lindquist can be reached via e-mail at *clindquist@cio.com*.

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From the Publisher

gbeach@cio.com

Just-in-Time Registration

Gary J. Beach

FIVE YEARS AGO I wrote a commentary for NPR. In it I advocated the use of the Internet as a voting platform.

In hindsight, I was wrong. And a recent CIO.com poll reports that nearly 70 percent of CIOs don't have faith in the results of a digital voting system. (See "E-Voting Debacle Looms," Page 18.)

But maybe *e-voting* was the wrong electoral application.

The most shameful legacy of the 2000 general election had nothing to do with hanging chads, but rather with the 76 million U.S. citizens who decided to stay home and not vote. While the power of the Internet might not be ready for prime-time voting, it can—and must—be put to use in facilitating a simple, yet powerful, concept: same-day voter registration.

In the most recent presidential election, just under 60 percent of U.S. citizens went to the polls. However, five states—Maine, Minnesota, New Hampshire, Wisconsin and Wyoming—experienced voter participation rates of nearly 70 percent. The common denominator in each of those states is a same-day voter registration process wherein people can register up to, and including, the day of the election.

Offering same-day registration makes sense. When does a presidential election campaign become most interesting? In the last four weeks of the campaign. But in many states, voter registration systems are closed down by that time.

In 19th century America, voter registration was not required, and 80 percent of eligible voters (all men, of course) participated.

But now voter registration is required. And while secure, real-time voting on the Internet still may be futuristic, now is the time to rally behind the power of the Internet to create dynamic, easy-to-use voter registration systems that allow Americans to register to vote right up through the day of the election.

I have 76 million reasons why this is a good idea. What do you think? Drop me note.

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How comfortable do you find the hot seat? E-mail Leadership and Management Editor Edward Prewitt at *hotseat@cio.com.*

No More Secrets to CIO Success

A study reveals that CIOs act just like CEOs—with one big difference

BY BETH STACKPOLE

Just a few years ago during the dotcom boom, it became fashionable to argue that CIOs were poised to become CEOs. It was believed that CIOs' unique enterprise perspective, both broad and deep, and their knowledge of IT—the new arbiter of competitive advantage—better qualified them to ascend to the top spot than managers who had taken more traditional routes up the ladder.

A few CIOs did in fact become CEOs (most notably Michael Capellas at Compaq and MCI, Kevin Turner at Sam's Club, and Christopher Lofgren at Schneider National); but in hindsight, that prediction was way off the mark.

Now a massive study of all types of executives shows that, in fact, successful CIOs and CEOs tend to be quite similar in leadership behavior—with one important difference in their thinking styles. Whereas CEOs (and other senior managers such as CFOs) tend to make decisions very quickly, zeroing in on one workable solution and taking immediate action, CIOs tend to evaluate situations from a variety of perspectives before coming up with multiple solutions.

Using data compiled from more than a half-million top executives (nearly 1,500 of whom were senior-level IT leaders), executive recruitment and development company Korn/Ferry International has developed a statistically valid success profile for CIOs. Leading CIOs and CEOs, according to the research, both are highly adaptive and open to change. Successful execs of both stripes also have a good sense of humor, are likable, and are excellent collaborators and team players.

This finding confirms the views of the CIO profession of Ron Ponder, who has accumulated a breadth of experience like few other IT execs. Ponder, who in July was named CIO of WellPoint when it merged with Anthem to become the nation's largest HMO, says, "If you look at CEOs or COOs or CMOs, the guys who rise to the top have a set of qualities that enable them to do that. The CIO is no different. They've just chosen technology as the route, while the others chose something different. We all wind up at the same place."

Korn/Ferry's leadership profile should put to rest the hackneyed stereotype that CIOs lack personality. "There's long been a myth that CIOs are extremely intelligent, can create systems and deal well with complex data but are not very social or outgoing," says Gary Hourihan, president of Korn/Ferry's strategic management assessment practice. "Yet it's clear the better CIOs design systems to reflect the strategy of the business, interface regularly with other senior management and are not icons sitting in their offices."

ILLUSTRATIONS BY MIRCEA CATUSANU

Profiles in Success

Korn/Ferry's executive leadership assessment started out as an adjunct to its recruitment database, in which the company has long compiled all kinds of job history and salary-related information on a variety of professionals, from supervisors to C-level executives. The company added a leadership component to focus on the behavioral requirements of job openings, rather than matching skills sets, as is traditional in the recruitment business. After evaluating various assessment tools, Korn/Ferry settled on one created by Decision Dynamics, a firm founded by academic specialists in career assessments. A notable aspect of the Decision Dynamics methodology is the thinking style of executives, which Korn/Ferry managers felt provided a more complete picture of an individual than do other leadership tools on the market, such as the popular Myers-Briggs assessment test.

The Korn/Ferry profile is administered online. Executives registering at the recruitment website are asked to complete a two-part questionnaire that measures their responses to hypothetical situations. The results are fed back into the main database. The top 20 percent and bottom 20 percent in each job category are compared after sorting the data by three factors: compensation, career trajectory and the quality of company. Smaller-name companies are weeded out, for example, as are candidates without vice president or senior executive titles. From there, the behavioral styles of the upper echelon CIOs are compared and contrasted with the lower ranks. In addition, successful CIO traits are weighed against those of successful CEOs.

The goals of the exercise are to determine if successful CIOs have fundamental differences in leadership style relative to their less successful counterparts, and to see if they share traits with the rest of top management. The answer came back a resounding yes on both counts. What the research shows above all, Hourihan says, is that effective CIOs, along with the rest of the upper management team, have moved away from the command-and-control leadership approach to a strong, interactive style. "There are better trained, smarter people coming up through the management ranks demanding to be heard, and that's made a difference in how companies are managed," he says.

Given the complexity of today's global marketplace, all varieties of top executives—from technology chieftains to marketing gurus—realize that they need to solicit information from others to make the best decisions without being blindsided. That lesson applies particularly to CIOs, says Ken Brousseau, CEO of Decision Dynamics. "If users are unhappy and not using the technology, then the whole IT strategy goes to hell in a handbasket. Yet tying IT and business together in some sort of coherent fashion cannot be accomplished by an autocrat or superexpert."

Being a mere order-taker doesn't cut it either, given that users often don't know what they need and lack a real feel for the potential of new technology. "You must become part of the fabric of the business," advises Ponder. "You can't just sit around, listen and take orders, and you can't always talk about the latest technology gig. You have to understand how to weave technology into the entire strategy of the business."

Therefore, for CIOs to be successful, they need social and behavioral qualities that can help them tap into what their constituents really need: what's dubbed a "social-participative" style. On a leadership level, CIOs with the best track records in the Korn/Ferry assessment score high on their ability to seek out the input of others and facilitate consensus-building, working through issues with

LEADERSHIP BEHAVIOR

Change Your Image or Change the Lens

Once you're familiar with your behavioral style, you don't have to let it keep you in a box. It is possible to modify your style through coaching—and a lot of introspection. But it's not easy.

In their book *The Dynamic Decision Maker*, Ken Brousseau and his coauthors at Decision Dynamics, the developers of the Korn/Ferry leadership assessment, discuss ways for executives to change their behavioral styles. Toning down a particular style, rather than changing it outright, is the more realistic route. To do so, the authors suggest first understanding the potential pitfalls of a particular style, then regularly anticipating those problems and planning actions to avoid them.

An all-out change of your style is a different ball game. To accomplish this, executives must either change the amount of information that they need to make decisions, or decrease the number of problems that they generate or to which they respond. Practicing your new style frequently to shed old habits and being realistic about gradual change are the keys to success.

Keep in mind, though, that no style is inherently bad or good—just bad or good for a particular situation. Sometimes the more appropriate measure is to change situations rather than deep-seated personal styles. *–B.S.*

peers and subordinates. From an emotional standpoint, the successful CIOs have been shown to have high levels of confidence and empathy—the latter characteristic being critical to their ability to deal with many different personality types.

I Think, Therefore I Am a CIO

Where successful CIOs veer off from the rest of upper management is in their thinking style, which the Decision Dynamics assessment defines as the way people act when they are absorbed in a problem or comfortable with an individual. Leading CIOs have what's called a "creative-complex" style, which means that they put emphasis on collecting data and contemplating all of their alternatives before putting anything into action. These CIOs typically come up with multiple courses of action for any particular problem, and will reexamine their decisions and make adjustments as required. As pressure mounts, successful CIOs will pull the trigger. But they won't do so as quickly and definitively as other executives, including CEOs, who tend to "satisfice"—a term for acting decisively with just enough information.

This difference goes hand-in-hand with the CIO role, notes Hourihan. CIOs shouldn't be making snap decisions without examining all the relevant supporting data. Ponder adds, "Successful CIOs today have the same qualities of leadership that would make a person a good CFO or COO or CEO. But unlike many of the other senior-level managers in a company, the CIO lies at the crossroads of the business. Therefore, they need to have that all-around view in terms of understanding the entire business because they serve the entire business."

Even so, it's hard to separate out causes and results of thinking styles. This one area of difference between successful CIOs and

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MANAGEMENT REPORTS

All-Time Low for Employee Morale

Dissatisfied IT workers have nowhere to go—for now

Much has been made of IT jobs lost to offshore outsourcing, but what about the workers who are still here? A large study of IT staffing trends shows that improving economic news has yet to translate into major hiring. At the same time, workloads haven't decreased for most IT workers; offshoring is still a relatively small phenomenon limited to a few companies. As a result, domestic IT workers are overburdened, with an attendant impact on morale, according to the Meta Group consultancy.

Meta Group surveyed 650 companies of various sizes for its "2004 IT Staffing and Compensation Guide," the sixth report in the annual series. Although 81 percent of the respondents said they were hiring this year, the new staffers were brought on largely to fill existing positions that were vacated. The total headcount for IT staff was nearly unchanged from 2003.

Morale for these workers is at an all-time low; according to feedback from employee satisfaction surveys, performance reviews, suggestion boxes and other means, 72 percent of IT organizations indicated a morale problem. The key driver for low morale is the continuing lack of job growth.

To redress low morale, 68 percent of the companies in the study took action, while 32 percent did nothing. The top two responses were employee recognition events and skill development opportunities, each cited by nearly half of the responsive companies. Other popular correctives were career development programs, annual action plans and more challenging work.

Notably missing from the morale boosters were the two actions that probably would be most effective: hiring more workers (cited by only 2 percent) or paying bonuses to existing staff (4 percent).

Historically, the consequence of low morale is poor employee retention. Yet two-thirds of the companies in the survey said retention of IT workers is not a problem—simply because the dissatisfied have nowhere else to go, opines Meta Group. When hiring picks up, however, companies that have neglected their workforce could suddenly find retention a serious issue.

Meta Group's prescription for increasing morale is to build a sophisticated "human capital management" capability (a surprising recommendation from a consultancy with no HR practice). But Meta Group cites a finding that only a quarter of the largest 2000 companies around the world employ one or more people as HR specialists for the IT organization. When it comes to caring for their IT staffers, many companies seem to have a long way to go.

–Edward Prewitt

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ASCENTIAL dialogue

on Data Integration

CIO Magazine Group Publisher Gary Beach Speaks with Karsten Sorensen of York International

Looking to grow its global service businesses and expand its leadership position, York in 2003 invested in three strategic IT initiatives. Chief among them: VISTA, an integration effort aimed at enabling common procedures, processes and operations through global shared business processes and systems.

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About Karsten Sorensen
Karsten served as York's CIO until September 2003. He currently serves as Executive IT Leader within VISTA.

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This is all about business transformation. We're selling the same products, parts and services all over the world. Why should the business processes or data be different?

- **What are some of the important qualities you sought in a technology solution to your integration challenge?**

The first thing we looked for was a solution set that would help us look at the data in a structured and intelligent way, so that we could deliver—and measure—our services globally, and grow our business efficiently. We searched the market and looked for a solution that could provide a single view of products, customers, partners and suppliers through a Master Data Management plan. Ascential Software was able to deliver on these requirements. To be an effective global business, we must be able to measure and control business units in a standard fashion, and we must be able to offer every customer a common level of service and interactions, regardless of where we're doing business with them.

- **What are your ROI goals?**

We know we cannot fulfill our global strategies without properly standardizing our data and processes. To measure our progress, we're looking for improvements in our overall business performance, as well as specific enablement of our global service strategy.

- **What advice would you give to other executives facing similar challenges?**

It's all about the data. Before you think about the system and the processes, you must think about the data. If you don't have the data right, and if you don't have the solution to help you get it right, then it doesn't matter what system you use. If you have poor data, you have a poor system.

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others in upper management may very well explain why more IT heads don't culminate their careers by landing the top executive spot. While many of the behavioral qualities of Korn/Ferry's leadership profile can be modified with training—learning better listening skills, for example, or being coached on how to be more adaptive and entertain multiple solutions—it's much tougher to alter an innate personality trait such as thinking style.

Nonetheless, Ponder is confident that CIOs have the right stuff for the corner suite. "It's still not a traditional route, probably due to the fact that it takes a long time for images and beliefs to go away. And today, the classical image of the CIO as a technologist still exists," he says. But he sees that slowly changing: "As technology continues to permeate the fiber of a company, you'll see more skilled and versatile CIOs come up through the ranks with mentoring and the exposure many of us had." CIO

> **"Successful CIOs today have the same qualities of leadership that would make a person a good CFO or COO or CEO. But the CIO lies at the crossroads of the business. Therefore, they need to have that all-around view of the entire business."**
>
> –Ron Ponder, CIO of WellPoint

Beth Stackpole (*bstack@stackpolepartners.com*) is a freelance writer in Newbury, Mass. Send your comments on this article to *hotseat@cio.com*.

Leadership Agenda BY SUSAN H. CRAMM

The Unnatural Selection Process for CIOs

Why most up-and-comers aren't ready for the next level

If you aspire to the CIO role, it's time to get real about career development. Most people assume that when the time is right, they will have a good shot at getting the top IT job in their company. Sorry to say, but odds are that it's not going to happen.

If you don't believe me, consider your current CIO. It's almost a sure bet that he or she was hired into the position from outside. When the time comes and you realize that the top spot at your organization is not coming your way, you will likely leave for a CIO job at a smaller company or settle in as number two or three—reconciling your lot while wondering why years of loyal and successful service were not enough.

You might think this is unfair, but there is a good reason that most companies look outside for their CIOs: Most of you aren't ready. In the lexicon of organizational development PhDs, you haven't accumulated the necessary experiences. These experiences are derived from years spent in the right types of assignments.

To accumulate the right experiences yourself, you need to manage your career, not just your staff. Mentors are hard to find and most CIOs don't give succession development much thought. I call this the unnatural selection process for CIOs. You can change this process, though, by asking for the right jobs at the right times in your career.

To prepare for a CIO role, you have to learn the business of IT. The various IT lines of business form an IT value chain, composed of customers, relationship managers, developers, operators, service providers and staff.

If you want to become a good CIO, you need to work in most (if not all) of these IT functions because running IT is a matter of managing contending opposites—generating shareholder value while investing in the future while delivering great customer service while operating efficiently. If you limit your experience to a single function, such as application development, you will have little understanding of the impact of the technology footprint on operating costs, for example, or the relative importance of help desk service issues on the overall perception of IT.

That being said, not all IT lines of business are created equal. The business customers want to work with one of their own and therefore want CIOs who understand the business and have a proven delivery track record. That's why most CIOs hail from the application developer function. That's also why it's so important to gain exposure outside of IT: to learn the business and foster relationships with senior executives who will help sponsor your career.

While you are looking for opportunities that provide exposure to various IT functions, also consider assignments that are jam-packed with challenges. In his book *High Flyers: Developing the Next Generation of Leaders*, Morgan McCall identifies seven job assignments that often play an important role in leadership development. These are early work experiences, first supervision, startups, turnarounds, changes in scope, task force assignments and line-to-staff switches.

Early experiences. From the start, you need to actively manage your career as an individual contributor. This is when it is easiest to move across the various IT lines of business and learn how to work with colleagues and managers who have backgrounds that differ from your own. As you advance up the career pyramid, cross-functional moves become fewer and farther between.

First supervision. Most executives wish they had more experience managing people earlier in their careers—when their mistakes were not quite so visible. Look for early supervisory opportunities, even if it means moving to less glamorous roles (for example, from application development analyst to help desk supervisor).

Startups. If you really want to understand the CIO role, find a startup assignment in which you are expected to build something without instructions—for instance, integrating the systems from a newly acquired business, helping start up operations in a new country or creating a consolidated data center. These are roles that will challenge your ability to set goals, gain resources and support, and manage issues ranging from the strategic to the mundane.

Turnarounds. Almost every available CIO job has some aspects of a turnaround. You need to prove that you can analyze the current situation and implement a plan that will elevate performance under tight time and budget constraints. To identify these opportunities, look for a customer who is unhappy, an expense that is out of control or a project that is long overdue.

> **If you really want to understand the CIO role, find a startup assignment in which you are expected to build something without instructions.**

Changes in scope. These are leadership roles that offer you new challenges in one or more of three components: the number of people managed, the level of financial accountability and the diversity of functions. These positions will test your ability to handle the unfamiliar and manage performance through others by "remote control." Within IT, most of these roles are in the operations and services functions, and they are often overlooked by up-and-coming development managers as areas for leadership development.

Task force assignments. One of the best ways to gain business knowledge and develop relationships outside IT is by working on a strategically important task force. It is likely that you will need to volunteer (and sell yourself), since task forces are usually run by non-IT leaders and your name will not be at the top of their lists.

Line-to-staff switches. The IT staff functions define the rules for the rest of the IT organization; strategy, governance, standards, financial and headcount targets, processes and metrics fall under the "office of the CIO." Joining the IT staff will teach you how to influence others without formal authority, give you a (sometimes not so pleasant) bird's-eye view into IT, and get you up close and personal with the CIO, business executives and IT leaders.

Before you become a direct report to a CIO, try to make sure you have been exposed to multiple IT functions, in challenging assignments that promote learning, self-awareness and relationships across the organization. This may mean that you forgo near-term promotion prospects and make lateral moves in your 30s to be positioned right for your 40s. Understand that you will need to communicate your career development goals and the types of roles you would like, be patient and ask for feedback along the way.

Many a talented professional has been lured to a job only to find himself working in a dead-end role under a powerless executive. The best way to manage your career is to remain humble and look for the right skill-building experiences under the right leaders rather than jump at the first promotion that comes along. CIO

To see reader questions and answers from Susan H. Cramm, go to *www.cio.com/leadership/agenda.html*. Cramm is founder and president of Valuedance (*www.valuedance.com*), an executive coaching firm in San Clemente, Calif. You can contact her at *susan@valuedance.com*.

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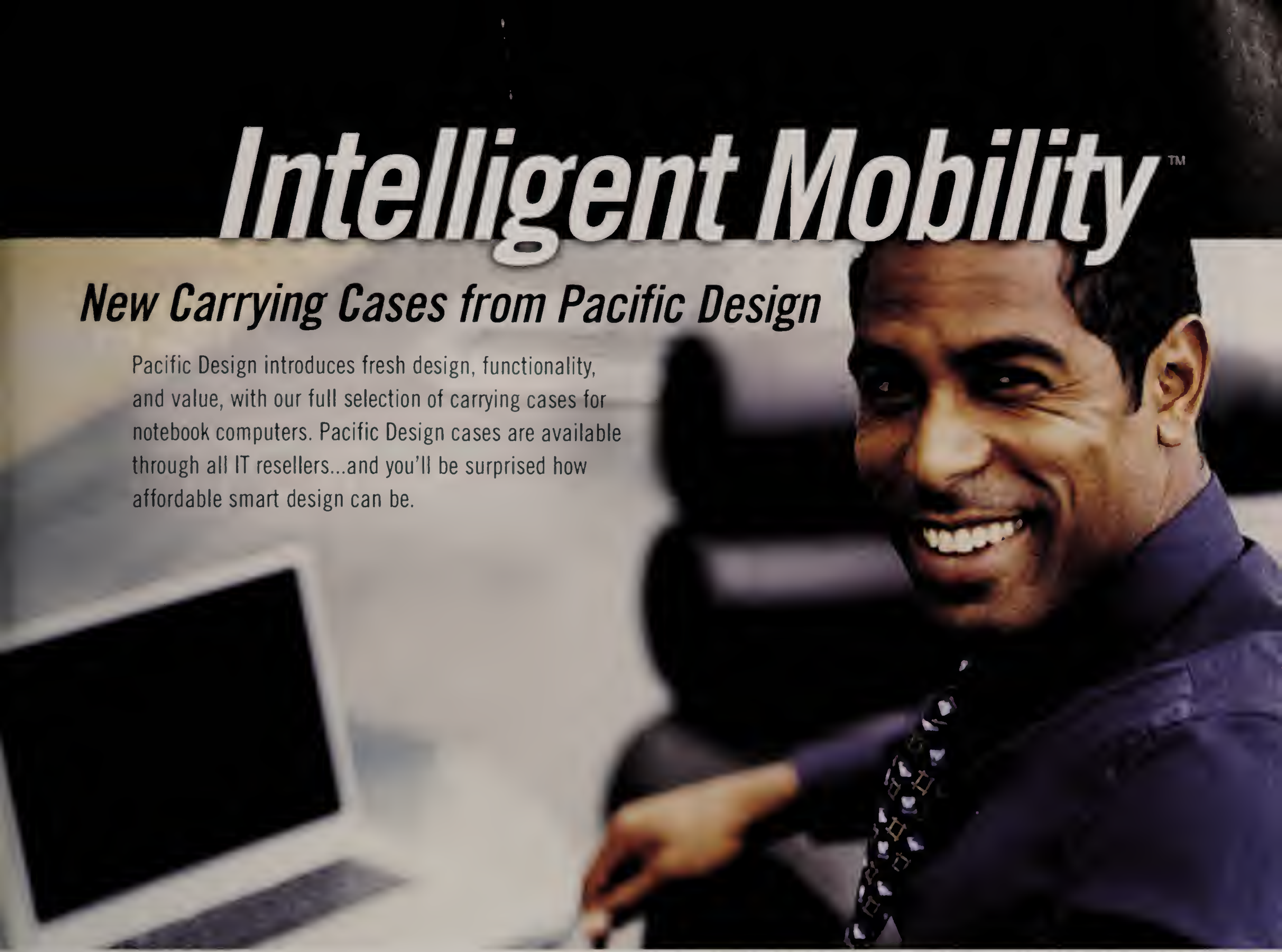

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EXECUTIVE Summaries

August 1, 2004

COVER STORY
Home Improvements
By Meridith Levinson | 34

As Home Depot became an icon of American business in the 1980s and 1990s, it relied heavily on homegrown systems to fuel its rapid growth. By building its own applications, the country's second-largest retailer avoided the complications of customizing off-the-shelf software. But as the chain grew beyond 1,000 stores, the in-house systems became too costly to support. And, as Home Depot moved into more markets, same store sales growth began to slow. At the same time, its closest rival, Lowe's, began its own program of expansion, winning back the home-improvement business it had lost to Home Depot in the '90s. In response, a new Home Depot CEO and a new CIO championed a move to off-the-shelf software and a strategic emphasis on customer self-service as opposed to high-touch service. Lowe's and Home Depot continue to look for the right balance between employees helping customers and customers helping themselves. The question is which will win out.

> "I think the current group in IT is both more willing to tackle big transformational change and move more to partnering better with the business."
>
> –JOHN BEASLEY, FORMER DIRECTOR OF OPERATIONS STRATEGY FOR HOME DEPOT

The SCO Slugfest
By Scott Berinato | 42

WORRIED ABOUT THE LEGAL COMPLICATIONS threatening the free future of Linux? If you're already an open-source code user wondering about your potential liabilities, here's a comprehensive set of crib notes to the landmark legal battles being fought by The SCO Group, which claims that its proprietary Unix code has been mixed into Linux-based products. We highlight the claims and the legal opinions on SCO's lawsuit against IBM, IBM's countersuit, as well as Red Hat's suit against SCO. We look at SCO's attempts to prosecute Linux users AutoZone and DaimlerChrysler. And we include a who's who of powerful anti-SCO and pro-SCO power brokers, and recap the various conspiracy theories circulating about Microsoft, Sun Microsystems and IBM.

Poindexter Comes in from the Cold
By Scott Berinato | 48

IN HIS MOST DETAILED DISCUSSION since leaving DARPA, retired Adm. John Poindexter speaks with *CIO* about DARPA's controversial and now dissolved Total Information Awareness (TIA) project, an effort to collect transactional information associated with everyday citizen activities and examine it for patterns that might suggest terrorist activity. Programs like TIA must negotiate the roiling waters of public debate, and Poindexter reflects on the difficulty of balancing the government's need to know against preserving individual privacy—and how he would have managed TIA differently. He also considers to what extent citizens can and should be informed about the intelligence activities and tools that penetrate their lives. We learn from Poindexter that certain aspects of TIA in fact continue; they've just gone underground.

Guide to Utility Computing
By Christopher Lindquist | 54

FOR ANY CEO OR CFO fed up with the cost, complexity and risk of IT, it's an appealing vision: computer power when and where you need it, software licenses on demand, no money wasted on overbuying, no users sitting idle because of underbuying. Utility computing is IT efficiency on a scale never before experienced. But CEOs being pitched and wooed by vendors or airline magazine articles should be forewarned about what on-demand computing really is, and isn't. What's the business case? What's in it for the vendors? How does it differ from outsourcing? And will it really reduce IT complexity? Answers to these questions and more are spelled out in this useful pass-along article.

Hot Seat: No More Secrets to CIO Success
By Beth Stackpole | 64

A MASSIVE STUDY by headhunting firm Korn/Ferry International shows that successful CIOs and CEOs tend to be quite similar in leadership behavior—both are highly adaptive and open to change and are excellent collaborators and team players. But there is one important difference: Whereas CEOs make decisions very quickly, CIOs tend to evaluate situations from a variety of perspectives before coming up with multiple solutions.

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